Zebra® KR403

Kiosk Receipt Printer

Hardware Integrator Guide

P1016701-001 Rev. C

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1 Introduction

KR403 Kiosk Receipt Printer

The Zebra KR403 model is the best-in-class thermal kiosk printer with the widest range of features. The KR403 printer provides direct thermal printing at speeds up to 150 mm/s (5.9 ips) at a 203 dpi print density. The KR403 supports the ZPL printer programming language and a wide variety of interface and feature options.

The KR403 printer features:

- Patented Looping Presenter – To reduce jamming and print image distortion caused by the user attempting to withdraw the receipt before imaging is finished, the KR403 employs an innovative “looping station”. The receipt is retained inside the print mechanism until imaging is complete, then it is presented to the user for removal.
- Media Pull Detection – When the user grasps the receipt and applies force to remove it, the KR403 senses the force and dispenses the receipt in a controlled fashion to prevent tearing or jamming.
- Retract and Retain – If the receipt is not taken within a specified time, the KR403 withdraws it and dumps it out the bottom of the printer, typically into a catch bin within the kiosk. The number of retracts are counted and reported back to the host.
- Easy Media Loading – Automatic media loading and preparation for printing. Optional supply low sensing.
- Flexible Media Support – Supports continuous, fanfold and black line receipt media and label media with automatic media sensing and calibration.
- Flexible Mounting – Horizontal and vertical printer mounting covering 180° of printer orientation and up to 360° with optional media adapter.
- Printhead Life Monitoring – Printhead element testing and print length odometer reporting.

- Industry Leading Bar Code Support – Largest set of common and specialized linear and 2-dimensional bar code symbologies resident in a kiosk printer.
- Powerful Font Support – One scalable and 16 bitmap fonts resident with support for downloadable and Unicode fonts.
- Interface Support – The KR403 is available with two interface configurations: USB / Serial, and USB / Ethernet.
- Storage – 4MB of flash memory with the largest in class 1.5MB available for programming, graphics and fonts with 8MB of SDRAM for fast image processing.

The KR403 printers offer a wide range of printer options and accessories:

- 58, 60, 80, and 82.5mm media guide widths
- 70 watt external printer power module
- Multiple printer media roll mounting accessory configurations and options
- Media Roll Low Sensor for use with Zebra and custom media roll mounting
- Large Media Roll Adapter to prevent motor strain when using large media rolls
- Full Flash (64MB) memory for storing large Unicode font sets, multiple fonts, graphics and programming
- Asian Language support with printer configuration options for the large Simplified and Traditional Chinese, Japanese, Korean, or Thai character sets
- Zebra's ZBI 2.0 (Zebra BASIC Interpreter) programming language. ZBI allows you to create custom printer operations and software language emulation

This integrators guide provides information you will need to install and operate your printer on a daily basis. To create receipt (label) formats, refer to your programming guides or receipt (label) design applications such as Zebra Designer.

Your printer, when connected to a host computer, functions as a complete system for printing receipts and labels.

Note • Many printer settings may also be controlled by your printer's driver or receipt (label) design software. Refer to the Software Integrator Guide (P1026208) for more information.

Package Contents

- The KR403 printer
- Warranty information

Note • To minimize cost and reduce waste, the KR403 does not include unneeded components or accessories. Additional items are required to make the printer operational.

Unpack and Inspect the Printer

When you receive the printer, immediately unpack it and inspect for shipping damage.

- Save all packing materials.
- Check all exterior surfaces for damage.
- Open and close the printer and remove any media or test prints in the printer.

If you discover shipping damage upon inspection:

- Immediately notify the shipping company and file a damage report. 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 all packaging material for shipping company inspection.
- Notify your authorized Zebra reseller.

Who Should Use This Document

This guide is intended for use by any person who needs to develop a kiosk using the KR403 printer and operate, or troubleshoot the printer.

How This Document Is Organized

The manual is set up as follows:

Chapter	Description
Introduction	What is covered in this document, contact information
Design Overview	Introduction to the KR203 Printer and package contents, design considerations overview
Printer Overview	Dimensions, orientation, and other features
Connections	Power and communication connections
Media	Loading, mounting, and feed angles
Accessories	Available options to enhance the kiosk design
Troubleshooting	Covers operational issues and resolutions for status indicator codes and poor print quality

This manual will be updated from time to time as printer functions and features may be added or amended. You will always find the latest edition on our website (http://www.zebra.com). If you require information for functions not found in this manual edition, please contact Technical Support for your region or the Zebra partner the printer was purchased from.

Contacts

Technical Support

Technical Support is available via Internet 24 hours per day, 365 days per year www.zebra.com. You can also email or call us using the following contact information.

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Document Conventions

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

Alternate Color – Cross-references contain links to other sections in this guide. If you are viewing this guide online, click the blue text to jump to its location.

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 information that emphasizes or supplements important points of the main text.

2

Design Overview

Design Considerations Overview

The kiosk designer needs to consider how the printer is being used, operated (media supply and maintenance), serviced, integrated with other kiosk components, and integrated into the enclosure itself. The KR403 printer needs some basic design elements to function properly, safely, and easily for the operator. The general issues are:

- The KR403 printer should always be installed in some kind of locking enclosure. The customer or untrained personnel should not operate or service the printer.
- Mounting orientation, use of the Looping or Vertical Presenter modes, and media waste bin considerations. See "Print Modes" on page 20.
- Simple mounting of the printer to the kiosk. See "Basic Printer Mounting (printer only)" on page 17.
    - The printer base plate must be mounted to a flat surface in the kiosk.
    - Max. screw penetration 4mm (see "Basic Printer Mounting (printer only)" on page 17).
- Printer power requirements – use of wired kiosk power (see "Attaching Power" on page 34) or use of the 70 watt power supply accessory ("Printer Power Supply – 808099-004" on page 77).
- Media Handing Roll or fan-fold, roll mounting or fan-fold tray, and media and printer mounting (design your own or use a KR403 printer mounting accessory - see "Accessories" on page 61). Media location in the kiosk relative to the printer (and its effects on maximum media roll diameter).

- Operator access to the printer. The operator needs to view, service and maintain the printer. The operator needs access to:
    - The operator needs to be able to see the printer's control panel for status lights and also press the Feed button while observing the status lights for media loading, setup and servicing the printer (see "Controls, Indicators, and Sensors" on page 24).
    - Open and clean the printhead or remove jams. Refer to the Service Manual (P1026223).
    - The media path between the printer and media (roll or fan-fold). A minimum clearance of 250 mm on one or the other side of the printer, printer controls, and media is needed.
    - Service and printer replacement; access to mounting hardware.
    - Designing for the operator; ideas for a more intuitive media loading, media preparation and use of media loading labels and documents.
- Cabling, power and electrical noise sources
- Ambient Lighting and external light sources
- Cooling

3

Printer Overview

Basic Printer Dimensions

The illustration below outlines the basic printer mounting dimensions to install the printer in a kiosk. These basic printer dimensions do not illustrate the unique integration requirements needed to use the printer with specific printer accessories, operator servicing access, media mounting, power and cabling access, and printer media handling.

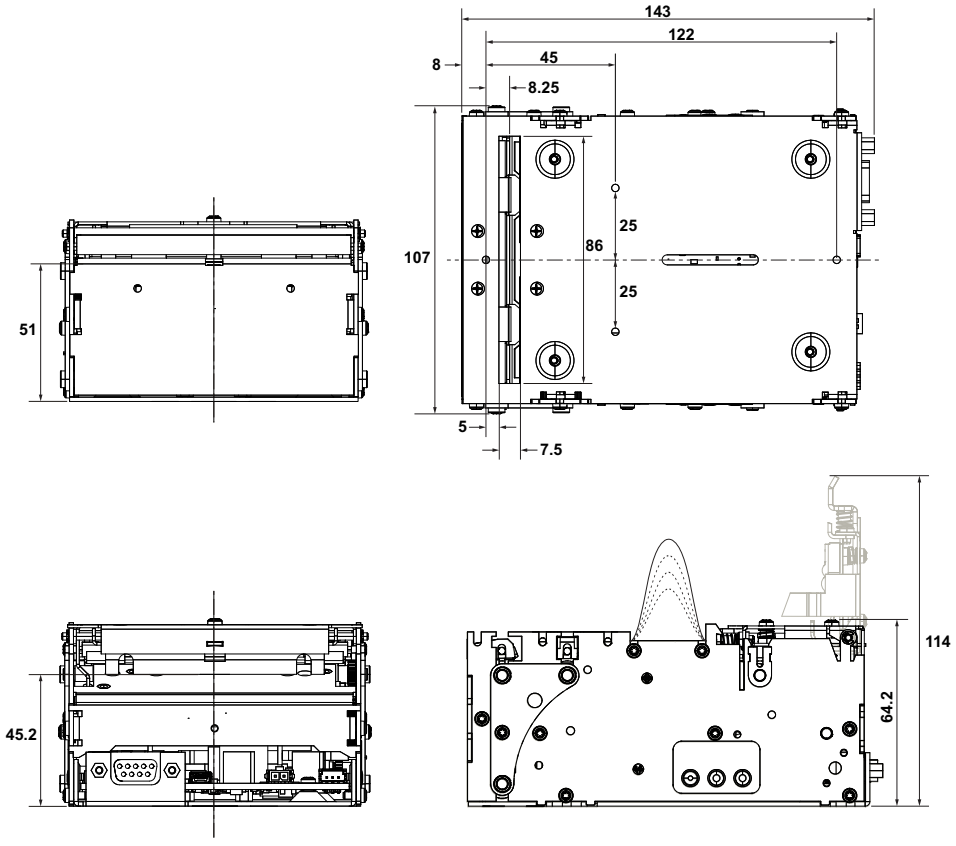


Figure 3-1 • Printer Dimensions

Printer Orientation

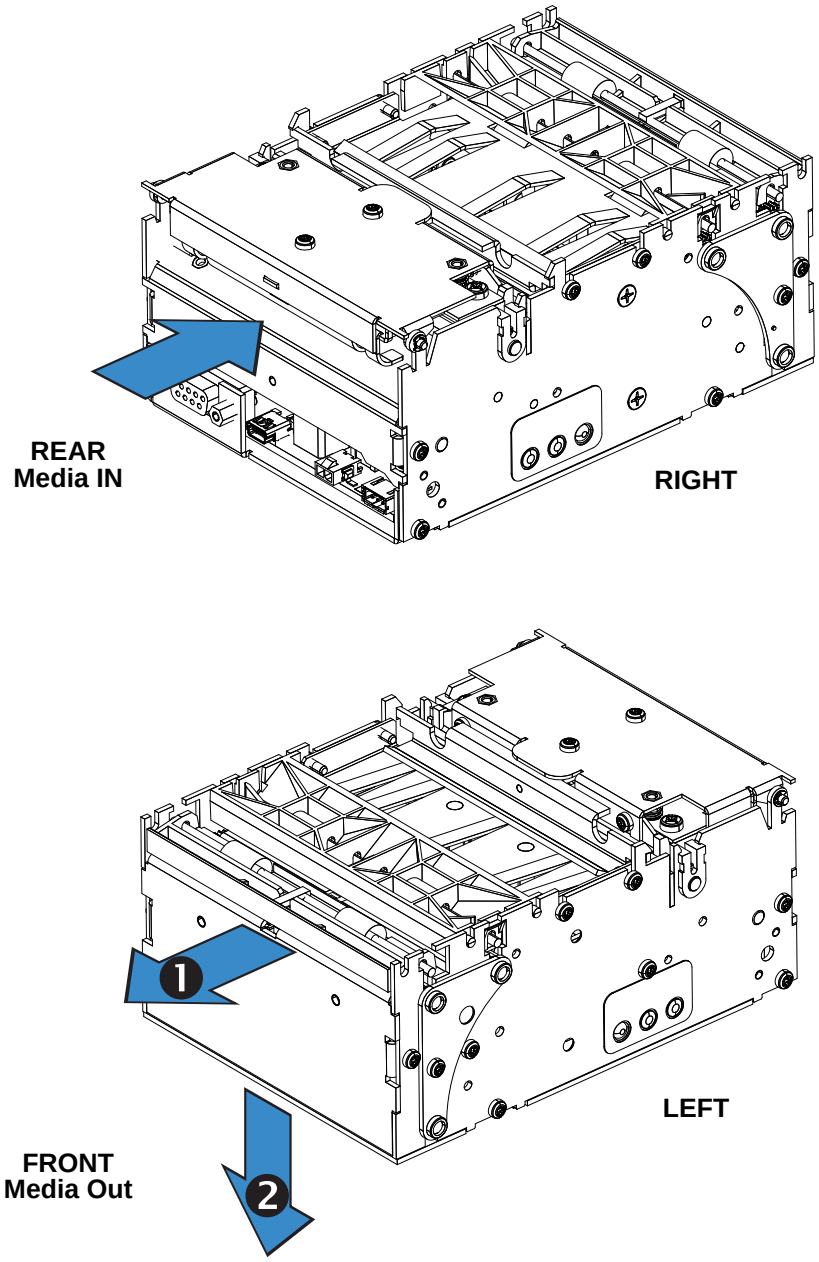


Figure 3-2 • Printer Orientation

Table 3-1 • Printer Orientation

Output	Horizontal Mount		Output	Vertical Mount
❶	Media Exit and Present		❶	Media Retract and Retain (in kiosk)
❷	Media Retract and Retain (in kiosk)		❷	Media Exit and Present

Printer Features

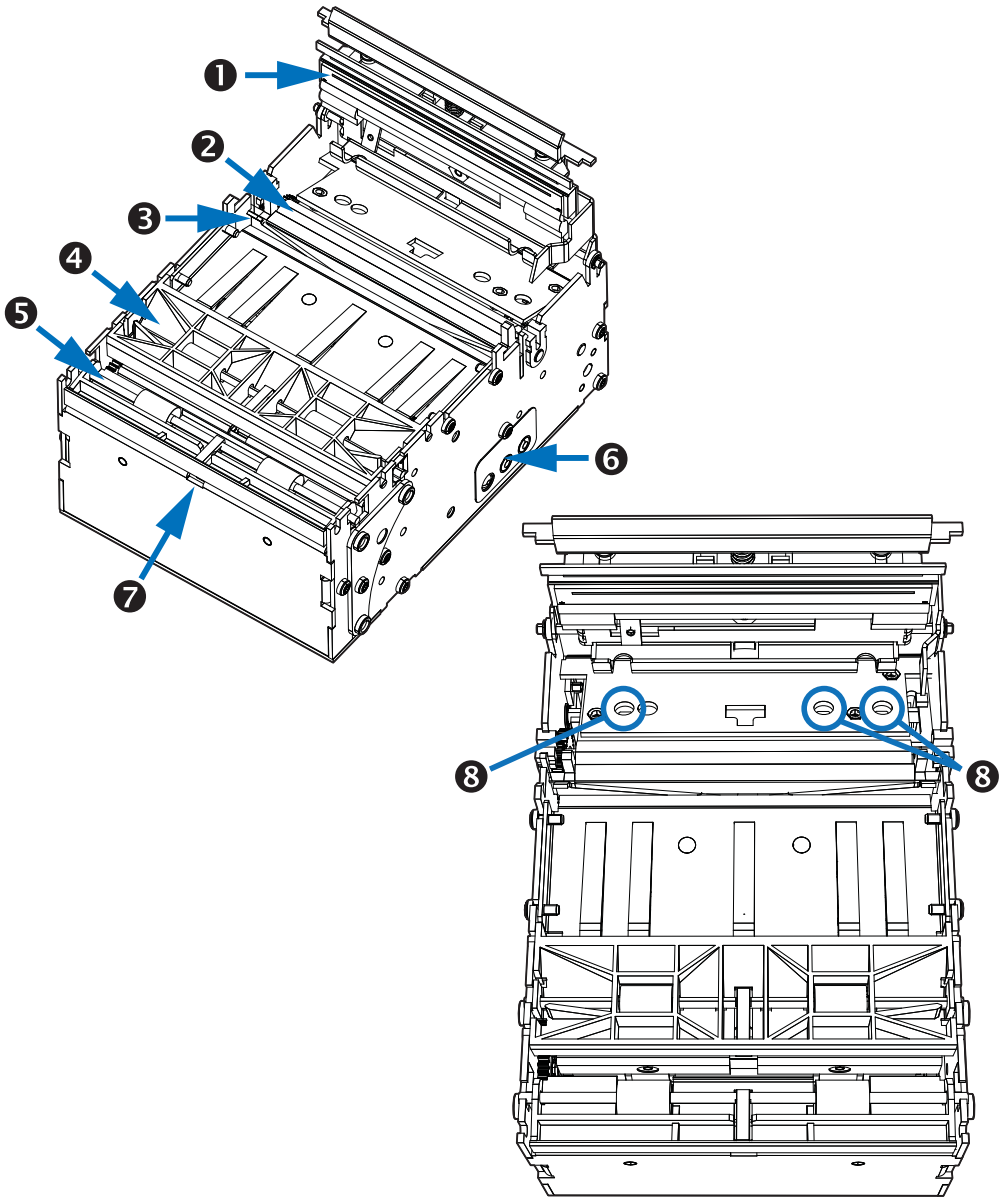


Figure 3-3 • Printer Features

Table 3-2 • Printer Features

1	Printhead	5	Retractor
2	Platen (drive) Roller	6	Control Panel (right)
3	Cutter	7	Retract Sensor
4	Presenter	8	Media Sensors

Printer Features (continued)

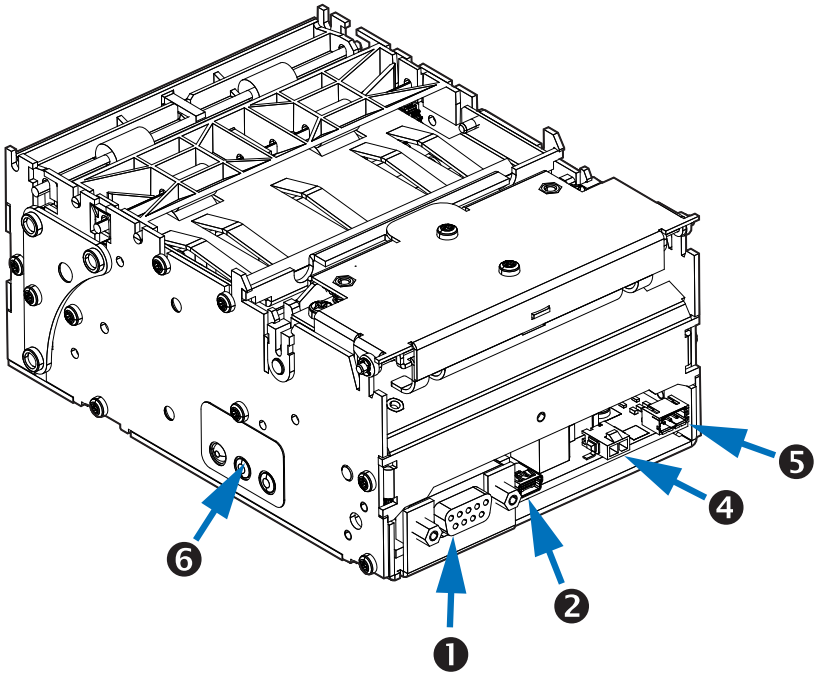


Figure 3-4 • Printer Features (Serial/USB)

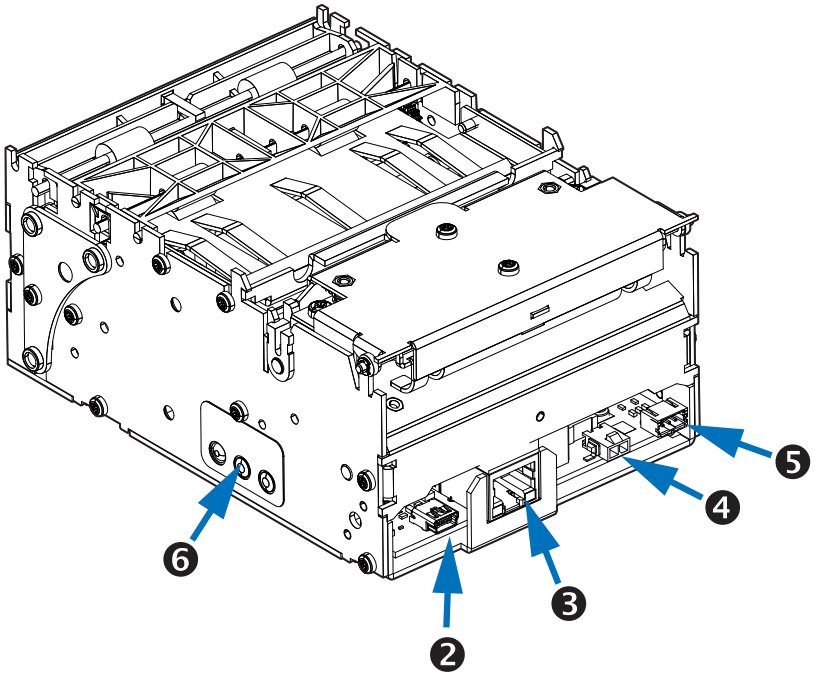


Figure 3-5 • Printer Features (USB/Ethernet)

Table 3-3 • Printer Features

1	Serial Connection	4	Power Connection
2	USB Connection	5	Paper Low Sensor Connection
3	Ethernet Connection	6	Control Panel (left)

Printer Features (continued)

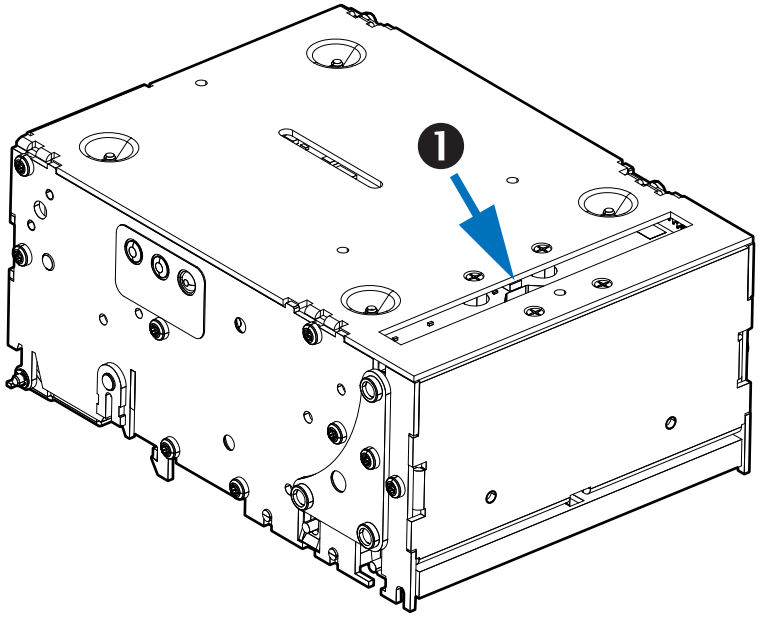


Figure 3-6 • Printer Features (Serial/USB)

Table 3-4 • Printer Features

1	Waste Sensor

Opening the Printer

When cleaning or servicing the printer, it is sometimes necessary to access the printhead.

1. Press the green printhead release bar to unlock the printhead.
2. Rotate the printhead assembly upward.

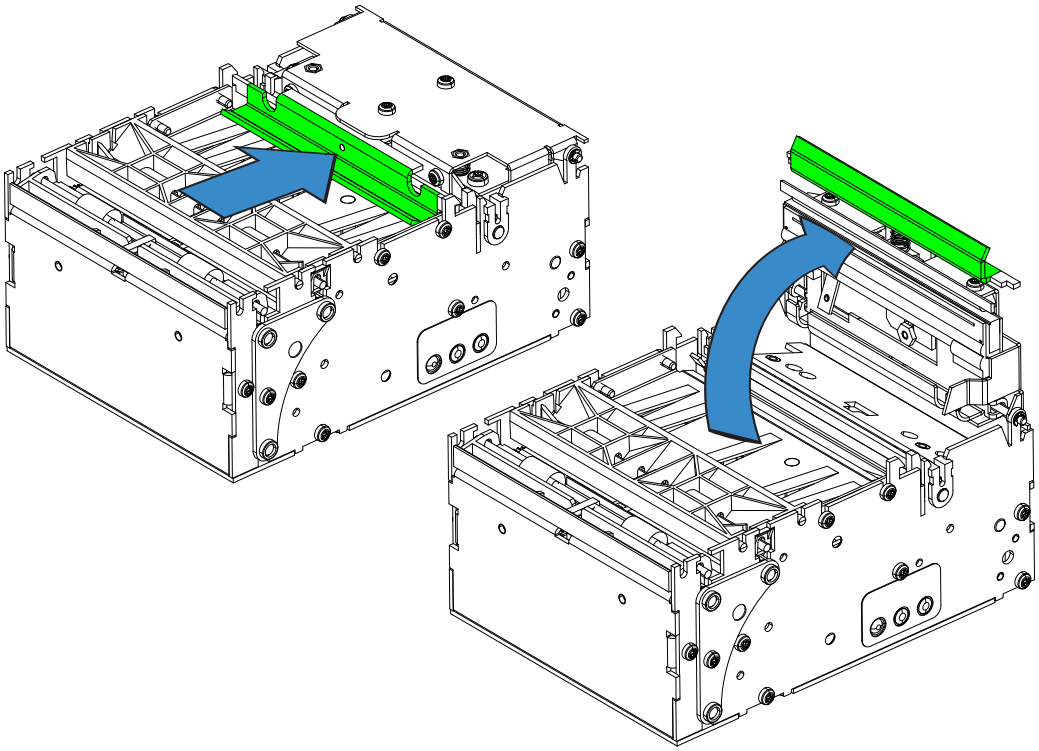


Figure 3-7 • Opening the Printhead

General Printing Information

Printer control	• Printer Control Panel – Allows very basic printer configuration setup that include: configuration status (label) receipt, non-default print widths, print darkness (density) • ZPL (Zebra Programming Language), a page (receipt) description language. The printer also supports the Zebra SGD (Set Get Do) printer configuration language that uses a natural language. • Windows Driver and Zebra Setup Utility • Zebra Designer – A receipt (label) design and print application for Zebra printers. Designer include support for graphics and logos, barcodes, text, downloading fonts. etc. • ZBI 2.0 (Zebra Basic Interpreter) – ZBI allows the software integrator to create custom commands and functions, and emulate other programming languages.
Print method	Direct thermal page printing using thermal sensitive media
Resolution	8 dots/mm (203 dpi)
Print speed	150 mm/s (5.9 inches/sec.) – Default 127 mm/sec.(5 inches/sec.) 101.6 mm/sec. (4 inches/sec.) 76.2 mm/sec. (3 inches/sec.) Note: Printer media is rated for specific speed ranges and some media types and materials will print better at slower speeds
Present speed	300 mm/s in kiosk mode the uses the Looping or Vertical Presenter modes. Non kiosk modes presenter speed matches the print speed.
Print duty cycle	Up to 33%
Media Sensors	Out of paper, paper in presenter, paper in retract path, black mark, and an optional external paper-low sensor.
Maximum print width	80 mm = 640 pixels

Auto Selected Print Widths

58 and 60mm guide	58 mm = 464 pixels maximum
80 and 82.5mm guide	80 mm = 640 pixels maximum

KR403 Media Types

Receipt Media Supply Type	**Outside Wound Continuous Roll:** Plain receipt, receipt with black marks, and pre-printed receipt media with black marks. **Fanfold**: Stacked receipt media with black marks and pre-printed receipt media with black marks.
Outer Roll diameter	250 mm (9.84 inches) maximum *Note: The maximum roll diameter is dependent upon roll holder in use and the kiosk design.*
Spindle (core) diameter	25 mm minimum (typical core size) 40 mm maximum 12 mm minimum with Small Core Media Roll Adapter
Paper width	58, 60, 80, and 82.5 mm (common receipt roll widths)
Paper Thickness or Caliper	0.054 – 0.11 mm
Paper Density or Grammage	55 –110 g/m^2 (or gsm) *Note - This is an approximate area density measurement that varies by country, paper type and measurement method applied.*

Basic Printer Mounting (printer only)

The printer can only be mounted to the kiosk using the four printer mounting screw holes shown in the illustration below. The printer is most secure when using all four of the mounting positions connecting the printer's base to a rigid metal base plate in the kiosk. The kiosk's metal printer mounting plate should be connected to the kiosks electrical (earth) ground for purposes of controlling static discharge and electrical noise.

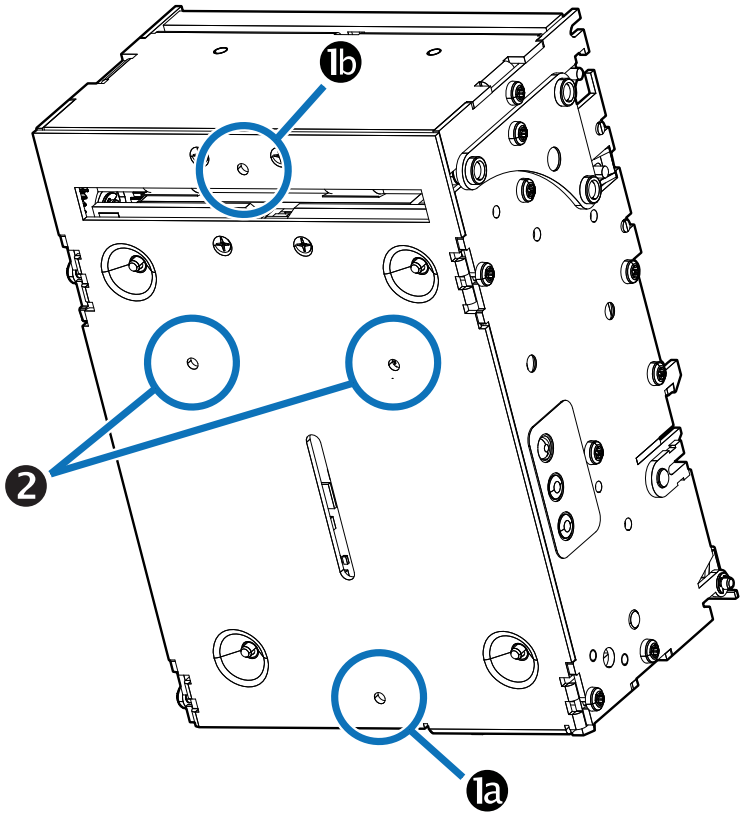


Figure 3-8 • Printer Mounting

Table 3-5 • Mounting Configuration

Mounting Positions	Kiosk's Print Base	Mounting Variation Details
1a and 1b	Full coverage of printer's base plate	• Minimum mount positions • Supports the Quick-Fit Hubs • Supported by most Zebra accessory mounting solutions
1a and 2 1a and 1b and 2	Partial (and Full) coverage of the printer's base plate	• Minimum three point mounting to fight torsional forces.

For information on ordering accessories, refer to "Contacts" on page 5.

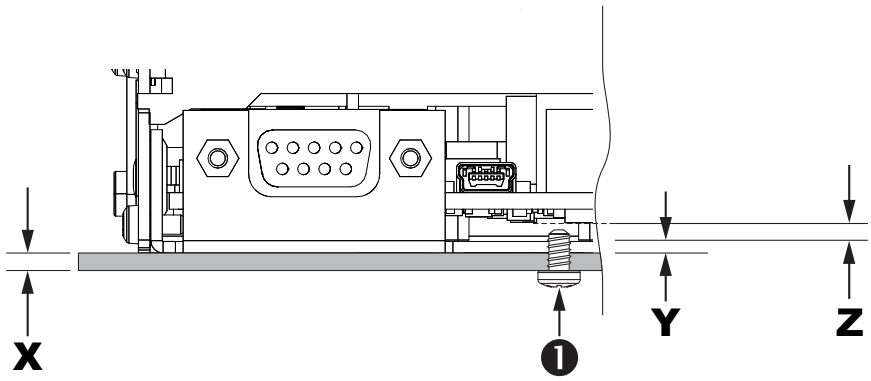


Figure 3-9 • Printer Mounting

Table 3-6 • M3 Metric Mounting Screw Length

1	M3 Screw	
X	1.5mm minimum	Printer mounting surface
Y	1.5mm	Printer base plate thickness
Z	2mm maximum	Penetration into circuit board area
X + Y = minimum length		
X + Y + Z = maximum length		

Design Your Own Mounting

The illustration below gives an example of a printer-mounting shelf.

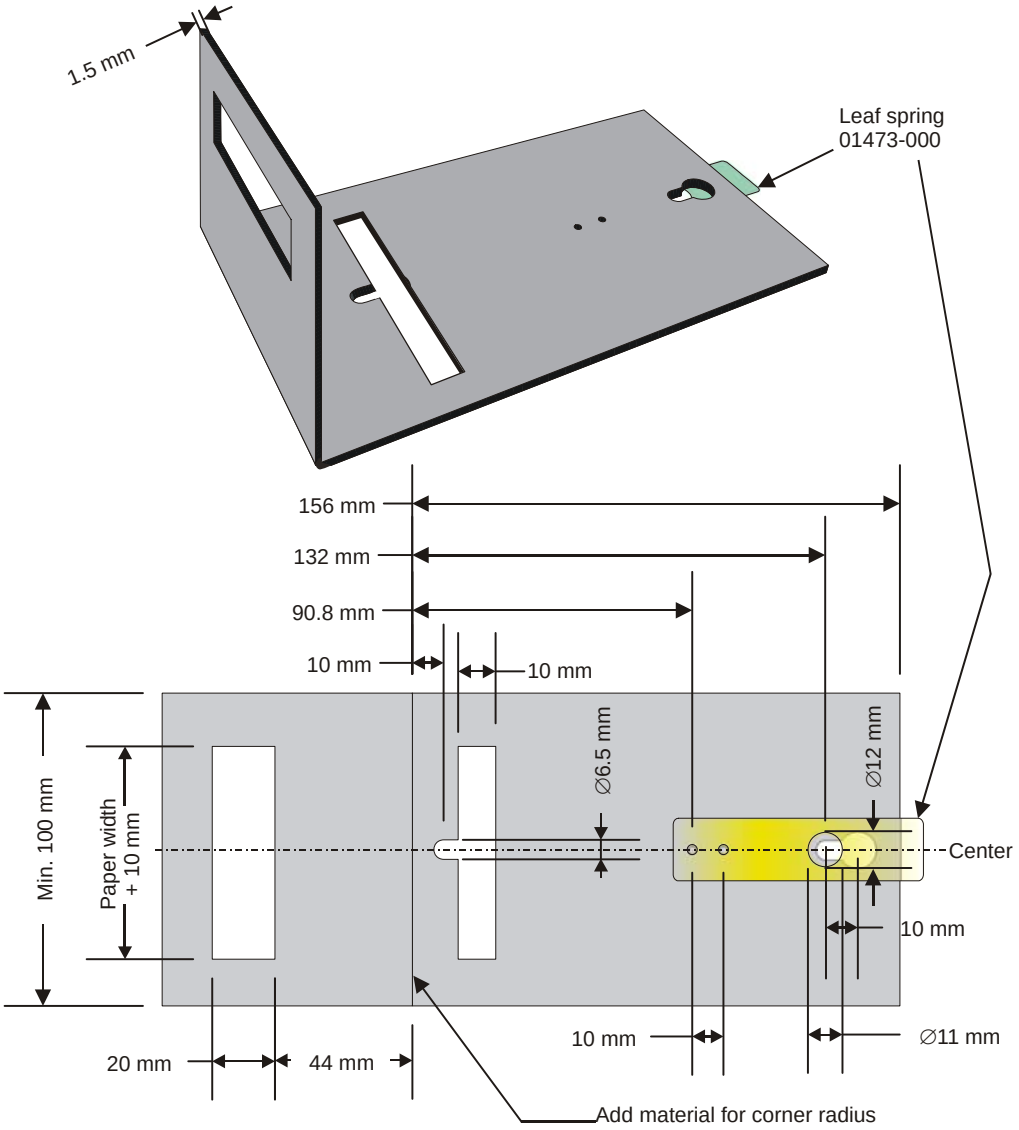


Figure 3-10 • Printer Mounting

Additional space is required for paper loading and service access. Consider mounting the printer on a movable platform so that the printer can be maintained outside the printer enclosure.

Note • We recommend making the output slot 97 mm wide. This width should accommodate all paper widths that the KR403 printers can handle.

Caution • NEVER use screws that go into the printer more than 4 mm! This will damage the electronics inside.

Print Modes

The KR403 is a versatile printer and can print in several modes: Kiosk (the default horizontal with looping presenter or configurable vertical presenter mode), rewind (receipt only with no cut or kiosk mode features supported), and cutter (simple mode to support label media, many kiosk features are supported, except looping, retract and partial cut) modes.

In Kiosk mode, the printer stores the printed receipt in the loop area (horizontal mounting) or hanging below the printer (vertical mounting) while finishing printing and cutting the receipt. The printer then presents the receipt to the kiosk client. When the client pulls the receipt, the printer immediately detects the roller movement and causes the printer to accelerate the receipt out of the printer. This helps prevent damage to the receipt. The kiosk mode also has programable options to retract the forgotten receipt back into the kiosk's internal waste bin below the printer.

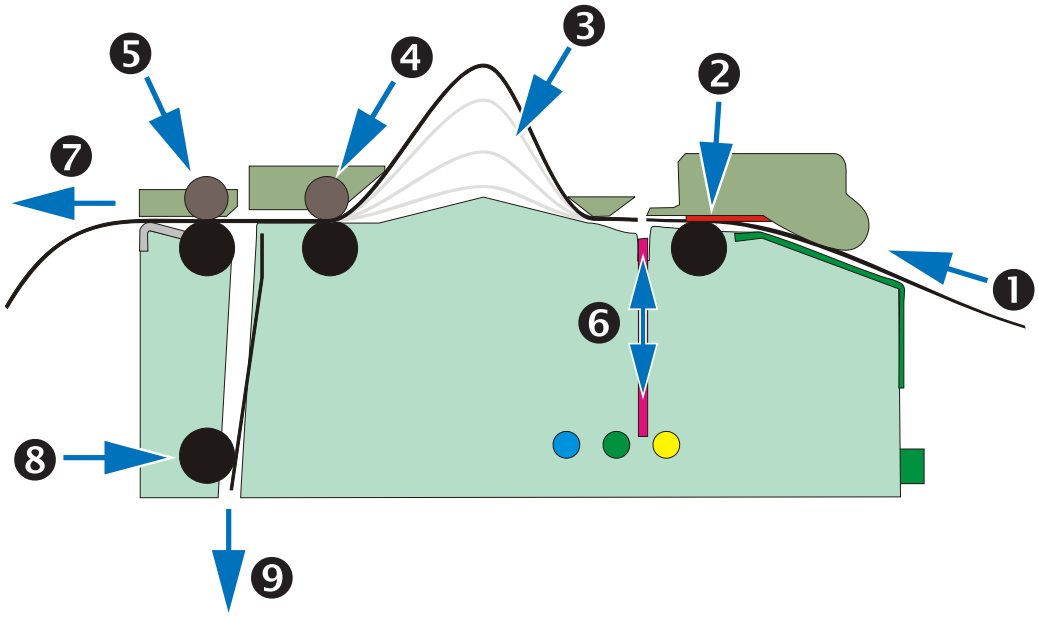


Figure 3-11 • Printing Sequence

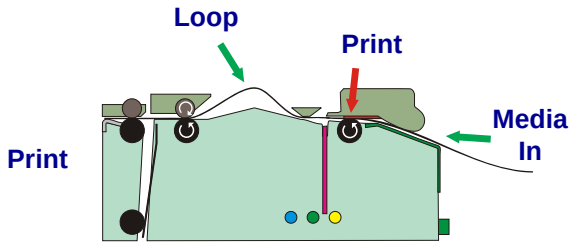
Table 3-7 • Printing Sequence

❶	Media Input - Use Auto or Manual media loading procedures	❷	Printhead and Platen (Drive) Roller
❸	Loop area (horizontal mode) - stores printed receipt is complete.	❹	Media Drive Roller and Loop Stop (forward only)
❺	Media Present and Retract Roller - Roller pivots on change of direction. Detects a media pull with motor.	❻	Media Cutter - Full or partial media cuts at receipt page or cut immediate.
❼	Media Present Exit (horizontal mode) Printed Media Storage and Retract to Waste Bin (vertical mode)	❽	Internal Media Drive Roll - Ejects the media out of the printer when retracting (horizontal mode). Ejects the paper when pulled (vertical mode).
❾	Retract to Waste Bin Exit (horizontal mode) Media Present Exit (vertical mode)		

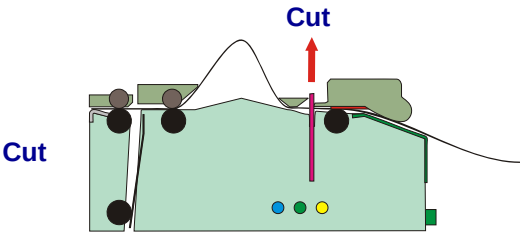
Looping Presenter (Kiosk Mode)

The loop generating presenter mechanism has many benefits:

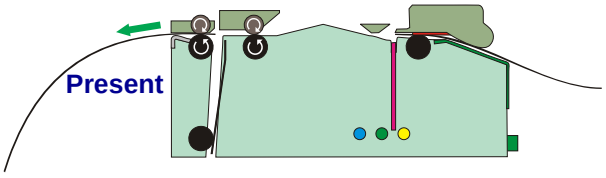
It handles documents of various lengths by storing the printed paper in a loop.



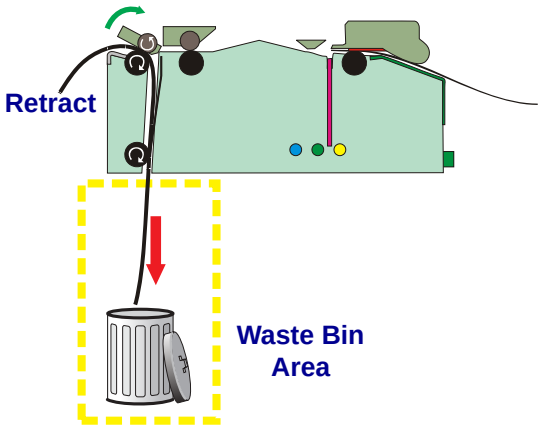
It holds the printout until fully printed and cut before presenting the completed printout to the customer. This eliminates issues many other printers have when the kiosk client tries to remove media before printing has finished.



A portion of the printout is presented. When the customer takes the receipt, the printer detects a movement and issues the rest of the receipt at 300 mm/s to help ensure receipt is removed undamaged. The amount of media presented can be customized to account for differences in the kiosk wall.



The retract-and-retain function can retract uncollected printouts and throw them in a wastebasket inside the kiosk. Retracts are reported to the driver so any remaining data for that printout can be deleted. Retraction can be initiated by an internal timer or issued directly by the application.



Vertical Presenter (Kiosk Mode)

The vertical presenter operation has many benefits:

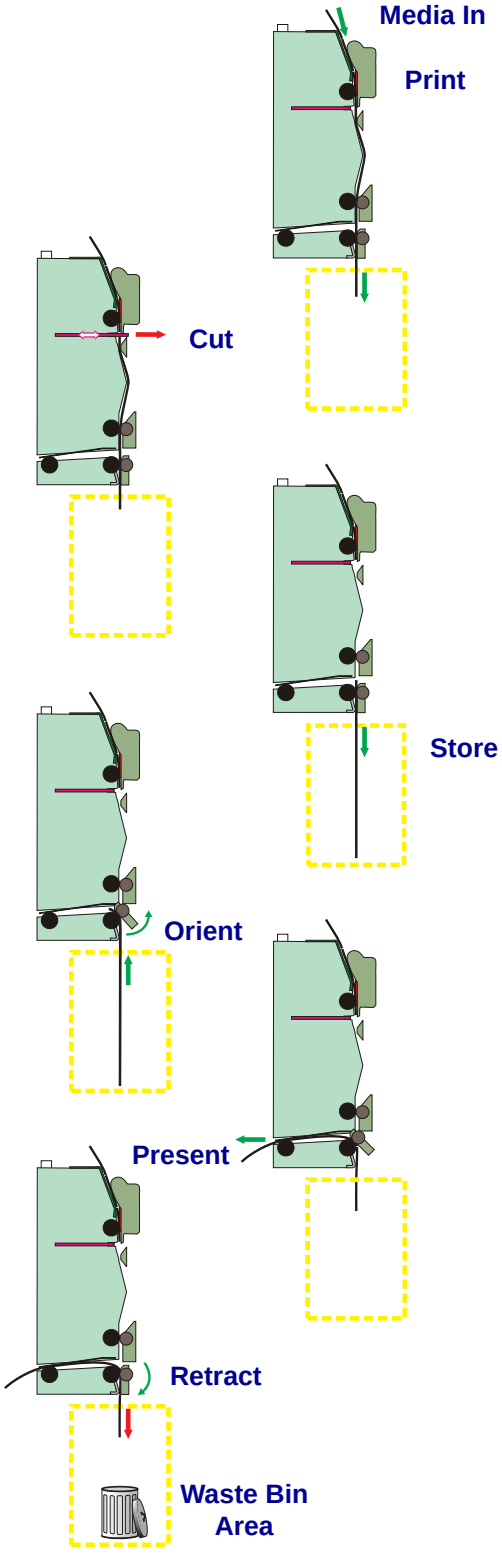
It handles documents of various lengths by storing the printed paper below the printer.

It holds the printout until fully printed and cut before presenting the completed printout to the kiosk client. This eliminates print issues caused by kiosk clients trying to remove media before printing has finished.

It stores the entire receipt to re-orient the printout to face up for presentation to your client.

A portion of the printout is presented. When the customer takes the receipt, the printer detects a movement and issues the rest of the receipt at a speedy 300 mm/s to help ensure receipt is removed undamaged. The amount of media presented can be customized to account for differences in the kiosk wall.

The retract-and-retain function can retract uncollected printouts and throw them in a wastebasket inside the kiosk. Retraction can be initiated by an internal timer or issued directly by the application.



Receipt (Page) Imaging Modes

The printer sets the following modes with programming commands or with the Windows driver.

The KR403 printer uses ZPL ‘Page’ mode programming to assemble and print receipts. Page mode printing describes the receipt margins and the image to be placed between the margins and then printed. The image is assembled in the image (memory) buffer and then printed as one continuous print.

Table 3-8 • Receipt Imaging Modes

Continuous (Kiosk Mode)	Prints the image buffer and cuts the media at the end of the image defined by Label Length parameter.
Continuous - Variable (Default - Kiosk Mode)	If the image is larger that the preset image buffer size, then the printer expands the image buffer to accommodate the larger image up to the printer’s maximum allowed size (set by programming, available memory, and print with). The printer then prints the larger image with print margin and cut the receipt. The next receipt will return to the preset image/receipt size if the next image is the same size or smaller.
Black Mark or Line (Kiosk Mode)	Prints receipts that match the receipt length set by the distance between the black marks or lines, and cuts the receipt at the black mark or line by default.
Cut Only (Cutter Mode)	*Can be used for printing labels, but it is not recommended for receipt use.* Typically used for printing liner backed labels that use black marks or black lines media to identify label ‘gap’ boundaries. Requires additional programming to ensure that only the media liner is cut. Cutting labels and their adhesive backing will eventually jam the cutter and require a service technician to correct. Prints the image and cuts the receipt. Does not use the kiosk mode ‘Looping’ or ‘Vertical’ presenter functions. Cut mode does not support the ‘Retract’ media function. Does not do ‘partial’ cut in Cutter Mode.
Basic Printing (Rewind mode)	*Not Recommended for kiosk use.* Rewind Mode has a deceptive name, it could be described as Rewind Disabled as it relates to other Zebra tabletop printers that share the ZPL programming language. Rewind Mode does not allow cutting the media (including Cut Now commands), the kiosk mode ‘Looping’ or ‘Vertical’ presenter operations, retract or eject command options.

Controls, Indicators, and Sensors

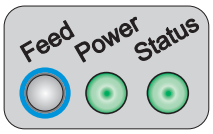
The KR403 printer has integrated controls, indicators, and sensors to enhance the usability of the printer for the client's kiosk experience, the kiosk operator's service and maintenance duties, and expand the developer's ability to provide printing and service information to the host kiosk system. The controls, indicators and sensors include:

- Media 'Feed' button with configuration and diagnostic functionality.
- Media detection and control sensors.
- Printhead temperature, sensor operation failure, and printhead testing.
- Cutter operation sensing and jam detection.
- Media output pull detection sensing.
- Support for an external low media (roll) detection sensor accessory option.
- Virtual sensing and report of printer operations to the host to simplify reporting and kiosk integration and design process.
- Programming configurable maintenance and service warnings for printhead cleaning, printhead life, printer life, and count of media retracted back into the kiosk. These features are off by default and must be set by Set/Get/Do (SGD) or ZPL programming.

The printer has redundant printer control and indicator panels on each side of the printer to provide the integrator greater flexibility for designing printer mounting for servicing the printer.

Feed Button Control

The Feed button has several functions:



- **Press and Release** will feed media, cut, and present a complete receipt page in the default kiosk mode. All the other integrator set modes and variations of the kiosk mode will at minimum, feed a page length of media when the Feed button is pressed and released.
  - Any data in the print buffer will be printed.
    If the buffer is empty the page will be blank.
    In black-mark mode, the page will be synchronized with the black-mark.
- **Press and Hold with the Printer ON** will cause the printer to enter the user interface mode, a set of manual setup and configuration operations used by the integrator. Refer to Table 7-2, "Application User Interface," on page 89.

Power Indicator

The Power Indicator is green when the printer has the 24 VDC power applied to the printer.

Status Indicator

Immediately after power is applied to the printer, a brief self test is performed and the status light will report the status of the printer.

Status conditions are reset and rechecked when:

- The conditions causing them are removed.
- The printer has power removed and reapplied.
- The printhead is opened or closed.

Refer to Table 7-1, “Application LED States,” on page 87 for condition descriptions.

Sensing, Status and Error Reporting

The KR403 has sensing and error reporting capability available to the printer for internal process control, status reporting to the host and custom printer software development by the software integrator. Many of these features and functions are supported directly by the Windows Driver and Zebra Designer via the driver.

- The printer monitors the printhead, motors, cutter and a variety of internal main board functions.
- The KR403 printer has virtual sensors and error flags’ that use combinations of sensors and status flags to create additional error reporting flags to simplify the software integrators task of monitoring the printer.
- The KR403 printer also has an odometer for maintenance alerts for printhead cleaning and printhead low life warning (printhead will need replacement soon). This feature is off by default.
- The KR403 printer also does power-up printhead testing, printhead critical fault testing for safety and has a programming accessible printhead pixel test that reports the functionality of individual pixels. This feature is off by default.

The following tables and illustration shows an excerpt from ZPL programmers manual of the error tables for the ^HQ status report. Please see the ZPL programmers guide for more details and related commands.

Table 3-9 • Error Flags (~HQES)

Error Flags	Flag	Group 2	Group 1 (X = Value can be any hexadecimal number [0-9, A-F])							
		Nibbles16-9	Nibble8	Nibble7	Nibble6	Nibble5	Nibble4	Nibble3	Nibble2	Nibble1
No Error	0	00000000	0	0	0	0	0	0	0	0
Error Present	1	00000000	X	X	X	X	X	X	X	X
Printhead Thermistor Open	1	00000000	X	X	X	X	X	2	X	X
Invalid Firmware Config.	1	00000000	X	X	X	X	X	1	X	X
Printhead Detection Error	1	00000000	X	X	X	X	X	X	8	X
Bad Printhead Element	1	00000000	X	X	X	X	X	X	4	X
Motor Over Temperature	1	00000000	X	X	X	X	X	X	2	X
Printhead Over Temperature	1	00000000	X	X	X	X	X	X	1	X
Cutter Fault	1	00000000	X	X	X	X	X	X	X	8
Head Open	1	00000000	X	X	X	X	X	X	X	4
Ribbon Out[b]	1	00000000	X	X	X	X	X	X	X	2
Media Out	1	00000000	X	X	X	X	X	X	X	1
Clear Paper Path Failed[a]	1[a]	00000000	X	X	X	X	8[a]	X	X	X
Paper Feed Error[a]	1[a]	00000000	X	X	X	X	4[a]	X	X	X
Presenter Not Running[a]	1[a]	00000000	X	X	X	X	2[a]	X	X	X
Paper Jam during Retract[a]	1[a]	00000000	X	X	X	X	1[a]	X	X	X
Black Mark not Found[a]	1[a]	00000000	X	X	X	8[a]	X	X	X	X
Black Mark Calibrate Error[a]	1[a]	00000000	X	X	X	4[a]	X	X	X	X
Retract Function timed out[a]	1[a]	00000000	X	X	X	2[a]	X	X	X	X
Paused[a]	1[a]	00000000	X	X	X	1[a]	X	X	X	X

a. This error flag is supported only on KR403 printers.
b. This error is not supported by the KR403 printer.

Table 3-10 • Warning Flags (~HQES)

Warning Flags	Flag	Group 2	Group 1 (X = Value can be any hexadecimal number [0-9, A-F])							
		Nibbles16-9	Nibble8	Nibble7	Nibble6	Nibble5	Nibble4	Nibble3	Nibble2	Nibble1
No Warning	0	00000000	0	0	0	0	0	0	0	0
Warning Present	1	00000000	X	X	X	X	X	X	X	X
Paper-near-end Sensor[c]	1[c]	00000000	X	X	X	X	X	X	X	8[c]
Replace Printhead	1	00000000	X	X	X	X	X	X	X	4
Clean Printhead	1	00000000	X	X	X	X	X	X	X	2
Need to Calibrate Media	1	00000000	X	X	X	X	X	X	X	1
Sensor 1 (Paper before head)[c]	1[c]	00000000	X	X	X	X	X	X	1[c]	X
Sensor 2 (Black mark)[c]	1[c]	00000000	X	X	X	X	X	X	2[c]	X
Sensor 3 (Paper after head)[c]	1[c]	00000000	X	X	X	X	X	X	4[c]	X
Sensor 4 (loop ready)[c]	1[c]	00000000	X	X	X	X	X	X	8[c]	X
Sensor 5 (presenter)[c]	1[c]	00000000	X	X	X	X	X	1[c]	X	X
Sensor 6 (retract ready)[c]	1[c]	00000000	X	X	X	X	X	2[c]	X	X
Sensor 7 (in retract)[c]	1[c]	00000000	X	X	X	X	X	4[c]	X	X
Sensor 8 (at bin)[c]	1[c]	00000000	X	X	X	X	X	8[c]	X	X

c. This error flag is supported only on KR403 printers.

Feed Button Modes

Ambient Light

There is an optical sensor 20 mm behind the paper exit at the front of the printer. Other sensors can also be affected by internal lights (and bright outside light sources entering through seams, vents, etc.) in the kiosk. To ensure proper printer operation, design the printer enclosure so that it prevents direct sunlight or light from indoor lamps from reaching the sensor through the paper exit.

See the "Shutter Bezel – 104591" on page 65 for an accessory option that has been used to shield the media output sensor from external light sources.

Cooling

The printer needs space on both sides of the printer to allow for convection cooling of the printer. This become more important with kiosk installing that have extreme environments and high printer use.

Manual Printer Reset

The KR403 printer does not have a power switch or reset button. To manually reset the printer, disconnect the power from the printer. Wait a few seconds for the Power LED to turn off and reconnect the power plug. The printer will take around a 25 seconds to reboot and initialize.

The printer can also be reset with the ZPL ~JR command when sent by the kiosk application. This is equivalent to cycling the printer power for the printer's internal programming.

Printer Configuration Methods and Tools

The KR403 printer has many printer configuration methods for the software and hardware integrator. Each is designed to assist you with various kiosk design and integration tasks. These integration tasks include printer startup, proof of concept, receipt design, status reporting, multi-printer configuration, and kiosk application design. The configuration methods from hardware to programming application include:

- Media Guides – Sets the printer's maximum print width. See "Media Guide - Required Accessory" on page 50 and "Installing the Media Guide" on page 50.

- Control Panel – The printer's control panel when using the Feed Button modes, provides the access or settings to automated media calibration routines, print darkness, print width (on receipt), automated serial port setup, and resetting the printer to factory defaults. See the "Feed Button Modes" on page 28 and the "Printing a Test Receipt" on page 59 for a view of one printer's printer configuration status label.

- Windows Zebra Setup Utility and Windows Drivers – Quickly allows the developer to use the printer, test configuration options, send programming commands or files, and print directly from Windows applications.

- Zebra Designer – A receipt and label design program that works with the Windows printer driver to help you quickly develop receipt layouts, and manage fonts and objects (graphics, logos and receipt forms) during proof of concept process.

- ZPL, SGD (Set-Get-Do), and ZBI (Zebra Basic Interpreter) Programming Languages – The ZPL printer programming printer page description language allows the application developer to configure and control all aspects of your printer with ASCII based text programming. The SGD object based programming language is used to set and check printer configuration status and configuration. These three programming languages should be used in separate command lines or files when sending commands to your printer. The ZPL Programming Guide for the KR403 printer covers all three languages in a single manual at this time. See the KR403 Software Integrator's Guide for assistance in quickly developing and integrating the printer.

- ZebraLink (File and) Firmware Downloader – This tool is used to initialize ZBI programming capability and download files to the printer. ZBI allows the software developer to emulate other programming and create custom commands. Can be used in a printer configuration workstation to send configuration files, firmware updates, and files (programming, graphics, logos and receipt forms). Use the full featured ZebraNet Bridge instead for everything but ZBI activation

- ZebraNet Bridge – Zebra Net Bridge is a printer maintenance tool for use with local and network based printers. The KR403 printer can only be managed as a locally connected printer (the KR403 printer does not have a Ethernet printer option). This Windows application is the ideal tool to use as a workstation for configuring your printer prior to installing it into a kiosk. Use it to duplicate configurations, send configuration files, firmware updates, and files (programming, graphics, logos and receipt forms). At the time of release, the KR403 Windows driver or the Setup Utility can not be loaded in the PC when using ZebraNet Bridge. It is scheduled for an update to remove the conflict with the driver and local printer management in 2010.

Fonts and Your Printer

The KR403 printer supports your language and font requirements with a variety of internal fonts, on-board font scaling, international font sets and character code page support, Unicode support, and font download.

The KR403 printer's font capabilities are programming language dependent. The ZPL programming language provides advanced font mapping and scaling technology to support outline fonts (TrueType™ or OpenType™) and Unicode character mapping as well as basic bitmapped fonts and character code pages. The ZPL programming guide describes and documents fonts, code pages, character access, listing fonts, and limitations of ZPL. See the printer programming guides for information on Text, Fonts and Character support.

The KR403 printer includes utilities and application software that support font download into the printer for both printer programming languages.

Identifying Fonts in Your Printer

Fonts and memory are shared by the programming languages in the printer. Fonts can be loaded in many memory areas in the KR403 printer. ZPL programming can recognize EPL and ZPL fonts. See the respective programmer guides for more information on fonts and printer memory.

- To manage and download fonts for ZPL print operation, use ZebraNet Bridge.
- To display all of the fonts loaded in your KR403 printer, send the printer the ZPL command **^WD**. See the ZPL Programmers Guide for details.
    - Bitmap fonts in the various printer memory areas are identified by the**.FNT** file extension in ZPL.
    - Scalable fonts are identified with the**.TTF**,**.TTE** or**.OTF** file extensions in ZPL.
    - The six fonts **LMu.FNT** through **LMz.FNT** are EPL Line Mode fonts and are not available for use.

Localizing the Printer with Code Pages

The KR403 printer supports localization with common international character map code pages.

- For ZPL code page support, including Unicode, see the **^CI** command in the ZPL programmer's guide.

Asian fonts and Other Large Font Sets

Asian language pictographic fonts have large character sets with thousands of characters that support single language code page. In order to support the large Asian character sets, the industry adopted a double-byte (67840 maximum) character system instead of the single-byte characters (256 maximum) used by Latin based language characters to address large font sets. In order to address multiple languages with a single font set, Unicode was invented. A Unicode font supports one or more code points (relate these to code page character maps) and is accessed in a standard method that resolves character mapping conflicts. ZPL supports Unicode and has support for the large pictographic double-byte character Asian font sets.

Asian language support requires additional memory support by the KR403 printer configured with the Full Flash Memory factory option. The number of fonts that can be downloaded is dependent upon the amount of available flash memory not already in use and the size of the font to be downloaded.

Getting Asian Fonts

Asian font sets are downloaded into the printer by the user or integrator. The fonts are purchased separately from the printer.

- Simplified and Traditional Chinese
- Japanese – JIS and Shift-JIS mappings
- Korean
- Thai

Stand Alone Printing

Your KR403 printer can be configured to work without being attached to a computer. The printer has the ability to automatically run a single receipt form. One or more downloaded receipt forms can be accessed and run with a terminal or wedge device to call a receipt. These methods allow the developer to incorporate data input devices, such as scanners or weight scales, to the printer via the serial port.

Receipt formats can be developed and stored in the printer to support receipts that have:

- One or more data variables to be entered via the terminal or wedge device. The receipt will print after the last variable data field has been input.
- One or more receipts formats that are called by scanning bar codes containing programming to run a receipt form.
- Receipt forms designed to work as a process chain with each receipt including a bar code containing the programming to run the next receipt in the process sequence.

The printer supports a special receipt form that will automatically run after a power cycle or reset. The ZPL looks for a file named **AUTOEXEC.ZPL**. The files must be deleted from the printer followed by a reset or a power cycle to completely remove the file.

4

Connections

Cabling and Cable Routing

Always tie cable down, use locking connectors where possible, allow for kiosk component servicing, and avoid electrical noise sources.

- Tie all cables to the kiosk chassis or printer mounting hardware that are near the printer, the media path or media. The operator can accidentally disconnect the printer or other kiosk components when maintaining the kiosk. Cabling must not interfere with the proper operation of the printer and media. The operator can become caught on cabling and drop heavy media damaging the kiosk or hurting themselves.
- Service Loops – There should be enough slack in the cabling to not put pressure on the cable connectors or the circuit boards. Also enough slack is needed to disconnect the printer (or their kiosk components) for servicing. Allow for movement needed to access the cable locks or slide the printer out when using the Quick-fit hubs.
- Avoid electrical noise sources: fluorescent lighting and ballast, power supplies, fans, AC power lines, CRT monitors, etc.
- Avoid twisting power and communication cables together. This can cause spurious noise on the communication port or raise emissions levels.

Large Media Roll Adapter Accessory

The large media roll adapter accessory adds an additional 10 cm to the front of the printer. It is therefore necessary to route cables differently when using this accessory. See "Routing Cables with the Large Media Roll Adapter" on page 85 for additional information.

Attaching Power

CAUTION • Never operate the printer and power supply in an area where they can get wet. Serious personal injury could result!

The KR403 printer has unique power requirements to operate efficiently, safely and within safety and compliance regulation guidelines. To achieve optimum performance, an approved power supply should be used to operate the KR403 printer. Refer to "Printer Power Supply – 808099-004" on page 77.

If a non-Zebra supplied power supply is used with the KR403, it must comply with the following requirements.

Table 4-11 • Power Supply Output Characteristics

Output Rating	24.0 Volts. 2.92 Amps and 2.5 Amps, +5° to +40° C
Voltage	24.0 Vdc +5/-2% Initial Tolerance, No Load)
Current	2.92A and 2.5AMaximum
Output Requirement When Printing (worst case conditions)	
Max Output Power	24.0 Vdc x 2.92A = 70 Watts typical
Peak Power (90VA Cin, 47Hz)	243W
Output Regulation	
Line Regulation	±0.5% over AC input operation range.
Ripple & Noise	240mVpp at Iout = 2.92 Amps, Resistive Load (4.7µF/50V ceramic Cap. On output, 20MHz BW)
Transient Load Response	< 5mS Recovery, 40% to 80% Load Change
Overshoot, Power-Ip	10% Max at power-on or power-off
Holdup Time	20ms Minimum, Rated DC Load, 120VAC/60Hz
Over-Voltage	Output Limited to +28V max.
Fuse	Yes
Thermal	Allowed, Not Required
Remark: When short circuit protection or over-current protection is activated, the power supply will shutdown automatically. Once the condition resulting in the failure is cleared, the power supply will restart.	
Automatic Recovery: Over-voltage protection is activated, the power supply will shutdown. The power supply is fully protected against short circuits and automatically recovers upon removal of the short without the need for re-cycling the AC input voltage.	

Note • The printer does not have an integrated power switch.

DC Power Plug Requirement

The KR403 printer uses a locking two pin connector. The mating connector is Tyco part number 1445022-2. The wiring for this connector and to meet the power requirements should be 20 AWG insulated wiring (UL type 1007).

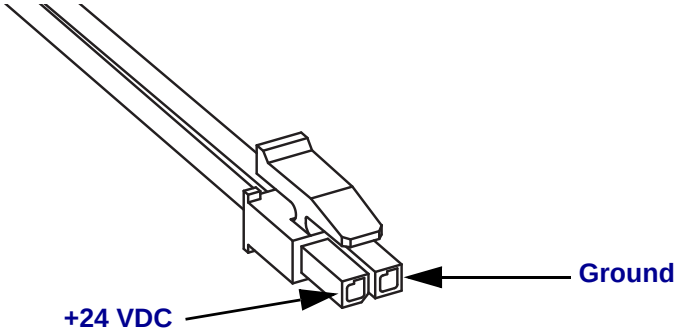


Figure 4 • Power Plug

Electrostatic Discharges and Earth Currents

The printer should have a dedicated earth ground connection. Preventing ESD and earth currents from affecting the printer operation requires proper connection to the printer chassis via a 12 AWG wire to protective earth.

The ground wire should be connected to the printer as follows:

1. Using a #8 Torx driver, remove the screw ❶ shown.
2. Attach the 12 AWG ground wire with cable lug ❷ to the printer chassis.
3. Connect the other end of the ground wire to a protective earth ground.

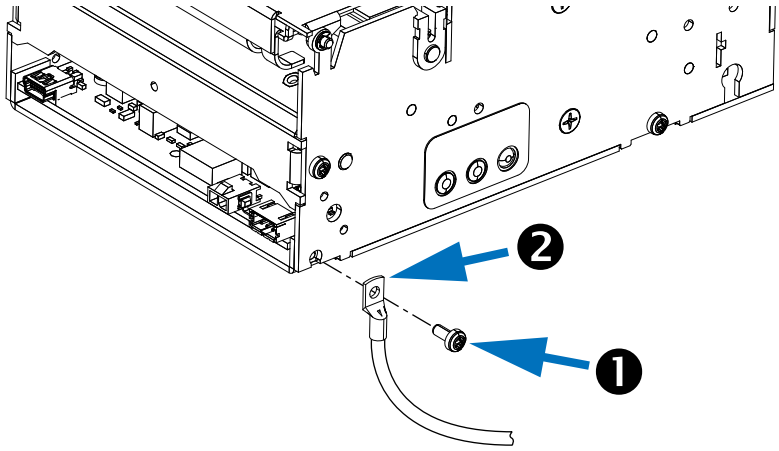


Figure 5 • Grounding

Connecting the Printer to the Host

The KR403 printer has a Universal Serial Bus (USB), an RS232 Serial port interface, and an Ethernet interface.

CAUTION • Keep the kiosk OFF when attaching the interface cable. The power cord must be inserted into the power supply and the power receptacle on the back of the printer before connecting or disconnecting the communications cables.

CAUTION • This printer complies with FCC “Rules and Regulations,” Part 15, for Class B Equipment, using fully shielded data cables. Use of un-shielded cables may increase radiated emissions above the Class B limits.

Interface Cable Requirements

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

To minimize electrical noise pickup in the cable:

- Keep data cables as short as possible (6 foot [1.83 m] recommended).
- Do not tightly bundle the data cables with power cords.
- Do not tie the data cables to power wire conduits.
- Avoid fluorescent lighting and power supply components.

USB Interface Requirements

Universal Serial Bus (version 2.0 compliant) provides a fast interface that is compatible with your existing PC hardware. USBs “plug and play” design makes installation easy. Multiple printers can share a single USB port/hub.

Additionally, the USB cable should include a ferrite located at the end of the cable closest to the host computer. This is to prevent any electrical noise generated by the printer from affecting the host computer.

Refer to Figure 6. On the USB / Ethernet configuration ❶, the USB connection is to the left of the ethernet connection. On the USB / Serial configuration ❷, the USB connection is to the right of the serial connection.

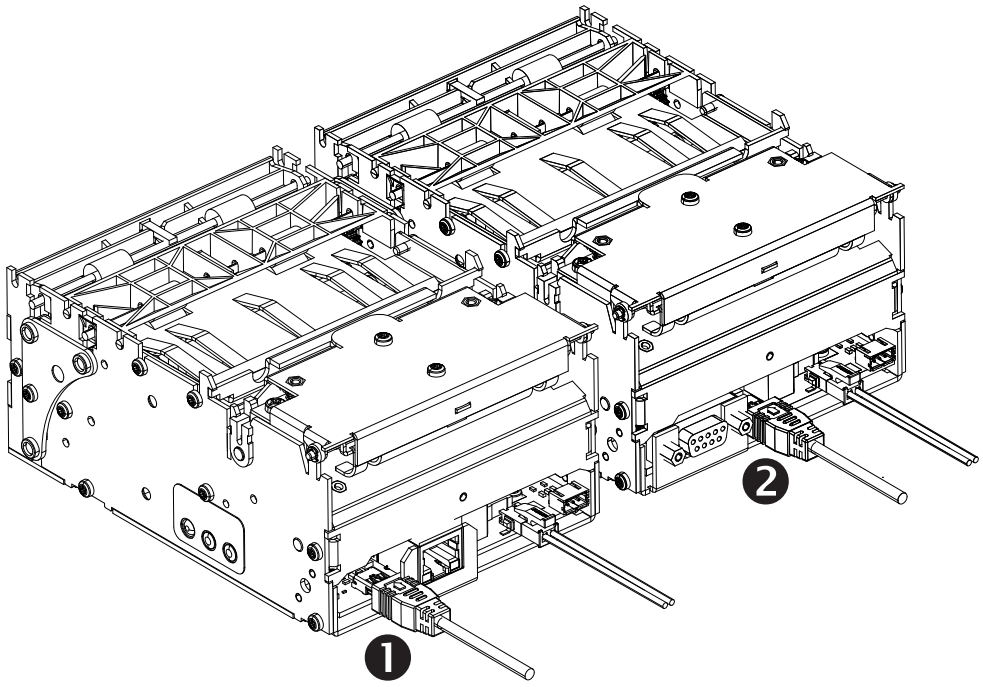
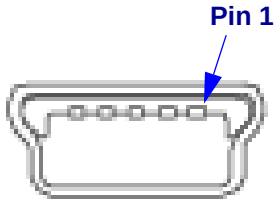


Figure 6 • USB Connection

When using a USB cable (not supplied with your printer), verify that the cable or cable packaging bears the “Certified USB™” mark to guarantee USB 2.0 compliance.

The figure below displays the cable wiring required to use the printer’s USB interface.

Pin	Signal	
1	Vbus - N/C	
2	D-	
3	D+	
4	Not connected	
5	Ground	
Shell	Shield / Drain Wire	

For printer supported operating systems and to download the latest driver, visit the Zebra printer web site at: (http://www.zebra.com).

Serial Communications

Refer to Figure 7. The required cable must have a nine-pin “D” type (DB-9P) male connector on one end, which is plugged into the mating (DB-9S) serial port located on the back of the printer ❶. The other end of this signal interface cable connects to a serial port at the host computer. Depending on the specific interface requirements, this will most likely be a Null Modem (cross-over) cable.

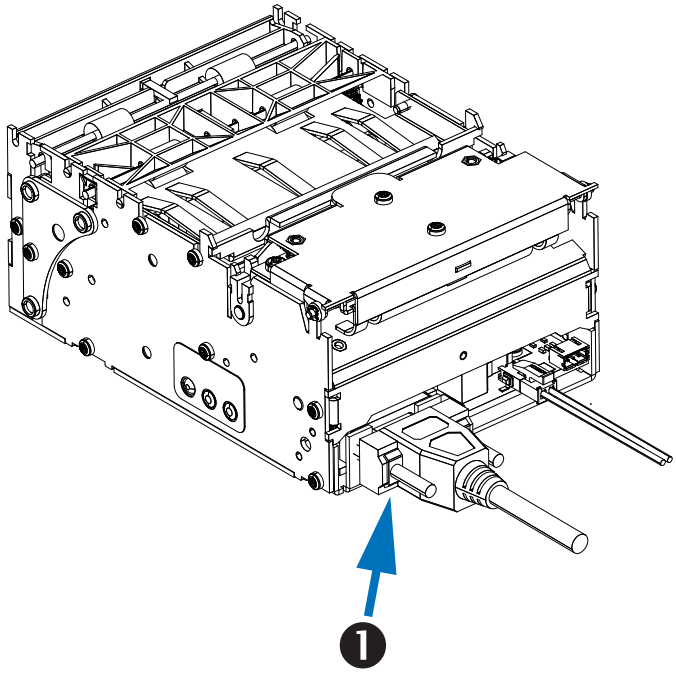


Figure 7 • Serial Connection

The serial port communication settings between the printer and host (typically a PC) must match for reliable communication. The Bits per second (data or Baud rate) and Flow control are the most common settings that get changed. The host (typically a Windows PC) needs to have the data rate and data Flow control changed to match the printer’s default communication method:

- **Bits per second** – **115K** is the printer’s default Baud Rate (Bits per second). The printer and host can not communicate unless these match.
- **Flow control** – **Software** and is noted by the printer’s Host Handshake setting of **`Xon/Xoff`**. The printer may communicate if these do not match, but it may not be reliable.
- Data bits: 8 – Default (Windows and printer)
- Parity: None – Default (Windows and printer)
- Stop bits: Doesn’t care

Serial communications between the printer and the host computer can be set by:

- Autobaud synchronization
- ZPL programming **^SC** command
- Resetting the printer to its default printer configuration.

Autobaud

Autobaud synchronization allows the printer to automatically match the communication parameters of the host computer. To Autobaud:

1. Press and hold the feed button until the green status LED flashes once, twice, and then three times.
2. While the status LED flashes, send the **^XA^XZ** command sequence to the printer.
3. When the printer and host are synchronized, the LED changes to solid green. (No receipts will print during Autobaud synchronization.)

ZPL ^SC Command

Use the Set Communications (**^SC**) command to change the communications settings on the printer.

1. With the host computer set at the same communications settings as the printer, send the **^SC** command to change the printer to the desired settings.
2. Change the host computer settings to match the new printer settings.

   Refer to the Software Integrator Guide (P1026208) for more information about this command.

Resetting the Default Serial Port Parameters

Do the following to reset the communications parameters on the printer to the factory defaults (serial communication settings are: **115k** baud, **8** bit word length, **NO** parity, **1** stop bit, and **XON/XOFF** data flow control).

1. Press and hold the feed button until the green status LED flashes once, waits a moment and flashes twice, and then waits again before flashing three times (release immediately).
2. While the status LED rapidly flashes amber and green, press the feed button. Serial communications between the printer and the host computer can be set by the ZPL **^SC** command.

Ethernet Interface

Refer to Figure 8. The USB/Ethernet KR403 includes an RJ45 Ethernet connection resident on the main logic board ❶. It is compatible with CAT5, CAT5e, and CAT6 cables. Cables are not supplied with the printer, the integrator should supply an 802.3 compliant cable.

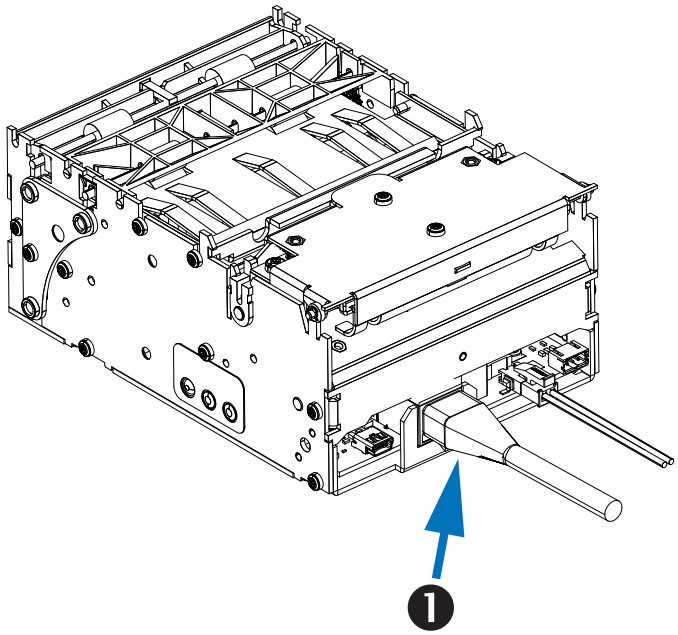


Figure 8 • Ethernet Connection

Communicating with the Printer

The easiest way to begin using your complete kiosk printing solution is to utilize the Zebra Designer Windows Driver in PC based systems. With the driver loaded; you can test the kiosk printing system, configure your printer, send programming commands, use Windows applications to print directly to the printer, and download files (fonts, graphics, logos, update firmware, etc.). The Zebra Designer driver works directly with the free suite of Zebra application software to design and create receipts (Zebra Designer) and manage one or more printers locally. All are available on the Zebra Web site at www.zebra.com.

Use the Zebra Setup Utility to load the driver and configure your printer. If the operating system automatically starts a ‘Add new hardware’ wizard, then close the wizard and continue installing the driver.

USB Printer Detection and Windows® operating systems

Windows XP, Windows Vista, Windows 7, Windows Server 2003, and Windows Server 2008 operating systems support the USB port communications with this printer when using the Zebra Setup Utility or the ZD (Zebra Designer) Windows Driver.

These operating systems automatically detect the printer when connected via the USB interface. The operating system automatically starts a “Add new hardware’ wizard when connecting the printer for the first time to the PC. Close the wizard. Install the printer following the wizard. The latest driver is found at www.zebra.com. Select the USB and then media size (closest match). Click on the ‘Print test page’ button to verify a successful installation.

The Windows operating system will detect and re-link a previously installed printer if it is reconnected to the USB interface or power is turned on after the PC has finished its restart of the operating system. Ignore the new device detected warnings and close the Task bar prompts. Wait several seconds for the operating system to match the printer to the driver software. The warnings will quit and the printer now should be ready to begin printing.

Serial Port and Windows® operating systems

The Windows operating system default settings for the serial port communication closely match the printer’s defaults settings with two exceptions; the data *Baud Rate* and *Flow Control* settings. The Windows default data *Baud Rate (Bits per second)* setting is **9600**. The KR403 printer requires data *Baud Rate* set to **115k**. The Windows default data *Flow Control* setting is **NONE**. The KR403 printer requires data *Flow Control* set to **Software**.

Note • The KR403 printer does not support Windows Serial Port Plug and Play (PnP) device detection at this time.

Ethernet Port and Windows® operating systems

Windows XP, Windows Vista, Windows 7, Windows Server 2003, and Windows Server 2008 operating systems support the ethernet port communications with this printer when using the Zebra Setup Utility or the ZD (Zebra Designer) Windows Driver.

5 Media

Designing Your Own Media Dispensing System

Properly dispensing the media to the printer is critical to the operation of the printer and quality print. The media, roll or fan-fold, needs to flow smooth and free with minimal drag or binding. Ideally it should have a clean and cool location for dispensing and storing media. Loading or dispensing media to the printer should not have interference or access restrictions with the kiosk enclosure or internal components.

- The media entering the printer should be aligned to the center of the printer.
- The printer and roll media should be level to prevent drag on the side of the roll and damage to the receipt edges. This can cause jams and printer stalls in the worst case conditions.
- The media should never touch or rest on cabling, kiosk walls and components, exhaust fans (dust and heat), heat sinks, etc.
- The media should be easy to reach and see inside the kiosk. Do not force the operator to bend or extend their arms too far into the kiosk to load media or service the printer.
- Optional Media Storage — Media stored in the kiosk should have a dark cool area separate from the rest of the kiosk enclosure that can be closed off from the heat of the kiosk components, moisture, and cleaning chemical vapors used near the kiosk.

Designing a Roll Support

The design elements needed for a good media roll support are:

- Simple design with no loose parts that can get misplaced, installed incorrectly, or require special techniques that can, when done incorrectly or carelessly, have the operator drop the media in the kiosk.

- Minimal drag. Do not use wires, cables or bars as a roll holder - all of these cause the roll to stop and start and rock back and forth. Narrow radius roll supports case these behaviors to a lesser extent. Some media vendors use roll cores made of fiberboard that can have seams. The KR403 Roll Support accessory minimizes the media contact area (only makes contact with the outside edges) and a large enough radius to smooth over seams (see "Roll Support – P1014124" on page 68). The larger the roll (more mass), the greater the effect it has on drag.

- Leave plenty of access room to load media when designing the area for your roll support. Leave additional clearance for the roll swinging on the support and hands that hold the media to load it.

Designing Media Guides

The media guides need to have a minimum radius of 10 mm. The surface should be smooth and not touch the edges of the media (causes drag or edge damage). The media should only touch radius surface and not the edge of the radius for all roll sizes that may be used (full or nearly empty). See the "Wall Mount Roll Holder – P1014123" on page 76 and the "Universal Roll Holder – P1014125" on page 71 side views to illustrate roll size and contact with a media guide.

Designing for Fan-Fold Media

Fan-fold media creates unique challenges. It has square edges that can get caught and the stack can fall into other components and cabling.

Make a tray to hold the fan-fold media unless it is being pulled straight up. Always test and observe with the actual media. Fan-fold media can un-fold erratically and act differently at the beginning and end of the stack.

Design a tray a little higher than the height of a full stack of media. Fan-fold media tray should keep the media stacked and never allow the media to be pulled into the kiosk.

When using a media guide, the guide should ideally be twice the distance of the length of the media stack away from the media guide and aligned to the center of the stack. This allows the media to completely unfold and minimizes the chances of having it bind in other components or printing multiple receipt or tickets.

Basic Media Mounting Considerations

The KR403 printer has a few basic requirements for dispensing the media to the printer from a roll or fan-fold media. The KR403 printer exclusively uses direct thermal media and it is chemically treated to react to heat. Some of these basic considerations include:

- **Align Printer with Media** – The center line of the media roll or fan-fold stack should align with the center of the printer to provide the best image quality and keep the media un-damaged. Always use a media guide when printing!

- **Media Only Contacts Media Mounting and Printer in Kiosk** – The media should not touch cables, other kiosk components, or surfaces other than media guides or the fan-fold media tray.

- **Do Not Blow Air on Media** – Air should be pulled out of the media area of the kiosk to keep dust (shortens printhead life and affects print quality), aerosol bourn chemicals (such as cleaning solutions like ammonia) and exhaust heat from other kiosk components and power supplies.

- **Direct Sunlight, Incandescent or Infrared Lighting or Heat Sources** – These light sources can come from kiosk vents and other kiosk components. Incandescent light bulbs and heat sinks are examples of heat sources that shouldn't be near the printer, media or media storage areas.

- **Media Dispensing Must Be Smooth and Easy** – Roll media must be able to turn with little or no drag, and allow the printer to smoothly pull media without jerking and stopping. Larger, heavier media rolls are more susceptible to these issues. Minimize roll to roll holder contact and avoid sharp contact surfaces. Fan-fold media must have sufficient room to unfold and not bind on media guide surfaces or at the perforations or sides. The printer can get distorted print (e.g. compressed print, short receipts, etc.), motor stalls, and jamming if media dispensing to the printer is not smooth and easy for the printer.

Media Supply Method

The KR403 printer supports two basic media supply method types: outside wound roll mount and stacked fan-fold receipt media. The media printing surface faces up towards the ‘top’ of the printer and away from the body of the printer.

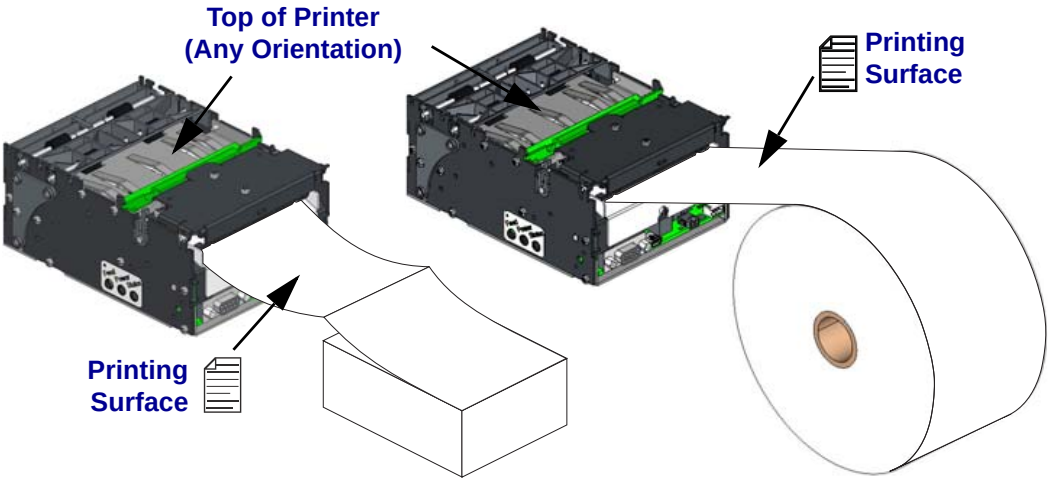


Figure 5-1 • Media Supply

Media Input Aperture

The KR403 printer has a wide aperture to support a wide range of media mounting locations. The media can enter the printer directly or indirectly with the addition of custom media guides or printer roll or mounting accessory kits.

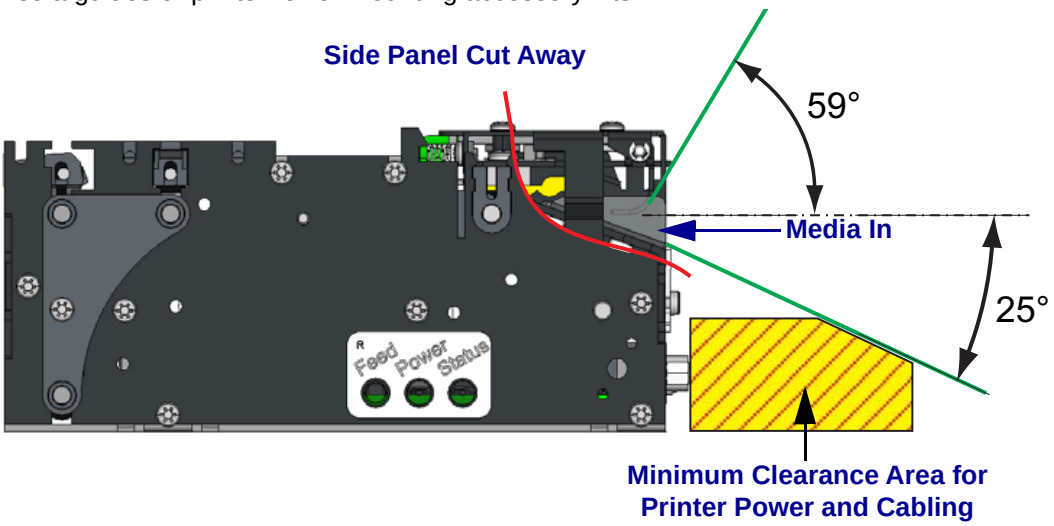
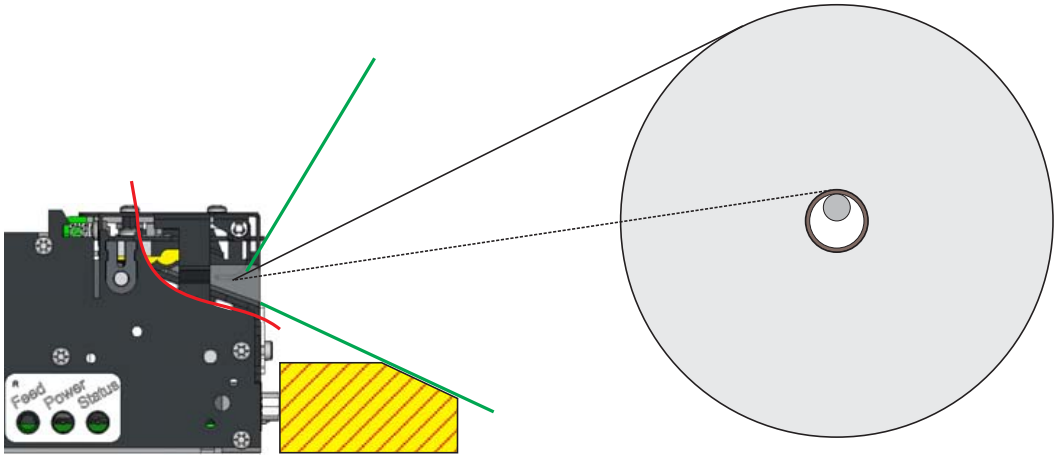
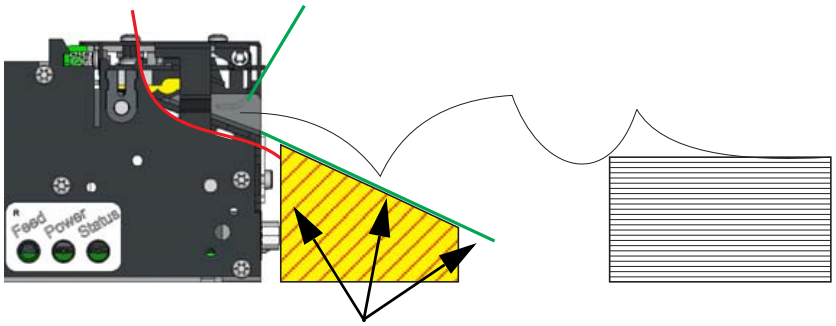


Figure 5-2 • Media Input Aperture

The direct media input (or angle of contact with media guides - not shown here) will change as the media is being consumed.



Minimum Clearance Area for Printer Power and Cabling



This area should have a continuous physical barrier separating the media and folds from binding in the cabling, printer body, kiosk chassis seams, etc.

Figure 5-3 • Media Aperture

Mounting Orientations

The printer has two basic kiosk operation modes and orientations: Horizontal and Vertical.

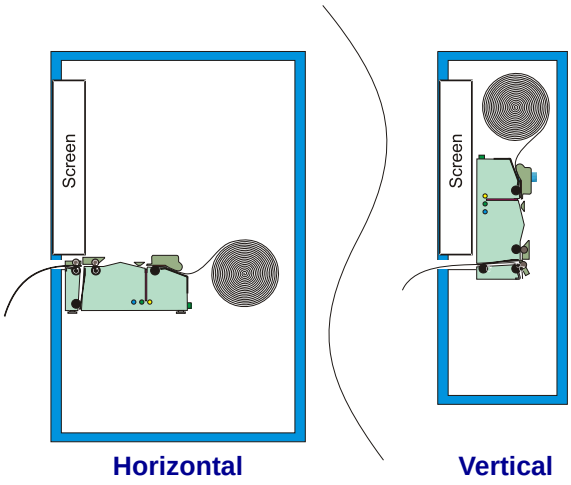
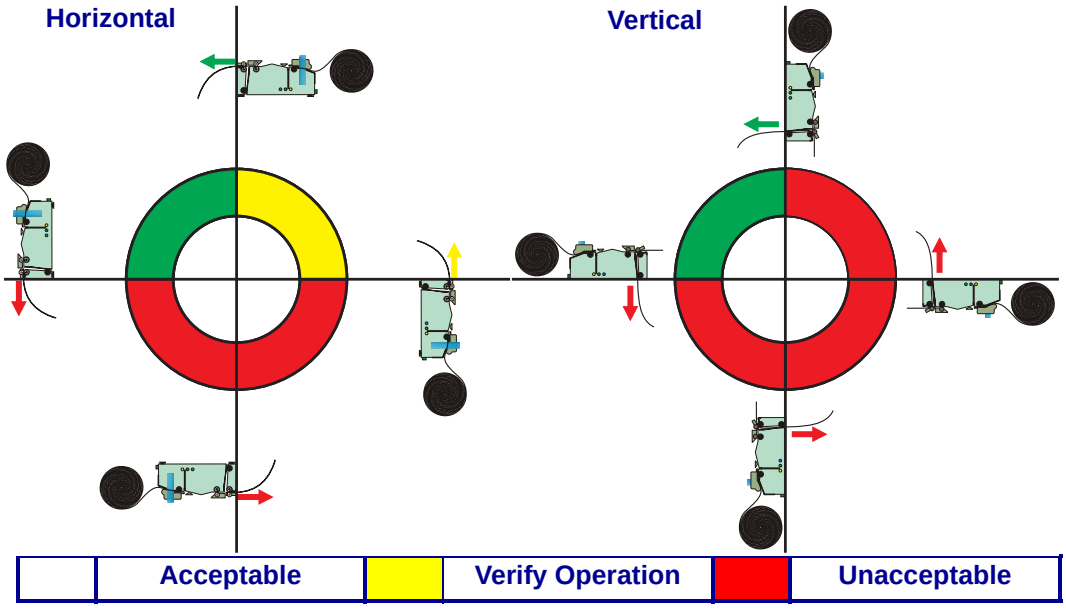


Figure 5-4 • Mounting Orientations

The maximum angle that the printer can operate from the nominal vertical or horizontal orientations is dependent upon environmental conditions and the media in use.

- Environmental conditions that can affect operation include: humidity (and temperature), circulating air in the kiosk, static buildup on adjacent kiosk components and surfaces, etc.
- Media considerations can include: length of receipt, partial cut of receipt in receipt design, media curving at the end of the media roll, media thickness and weight, perforations on fan-fold or receipt media, etc.
- Other considerations that affect your printer mounting are also in this section include: media mounting, media path, media access, printer maintenance, cabling, etc.



The areas of primary concern are the horizontal operation's 'loop area' and 'waste bin', and vertical operations 'receipt presented storage', 'waste bin' and open 'loop area' (with no loop). These two areas can require special attention when designing the inside of the kiosk. The printer needs the space to store the printed receipt before presenting it to the customer. The longer the receipt, the greater the area needed. When mounting the printer at angles other than the nominal vertical or horizontal orientations, simulated receipt printing operations should be observed with ideally the chosen media for use in the kiosk and in the environmental conditions that it will operate on-site.

The KR403 mounting becomes even more versatile if the Small Roll Media Roll Adapter accessory is used to guide the leading edge of receipt into the input of the media drive rollers. This allows the printer to be mounted in a wider range of mounting orientations shown below

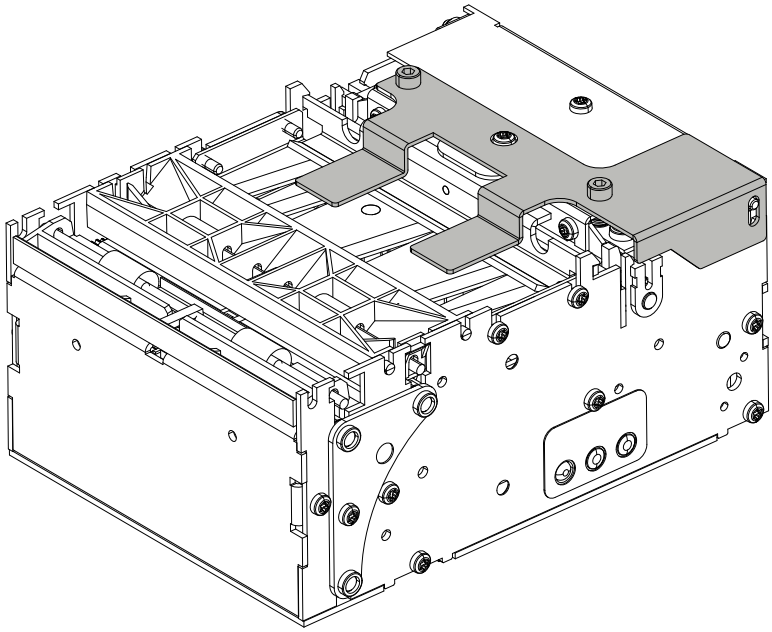
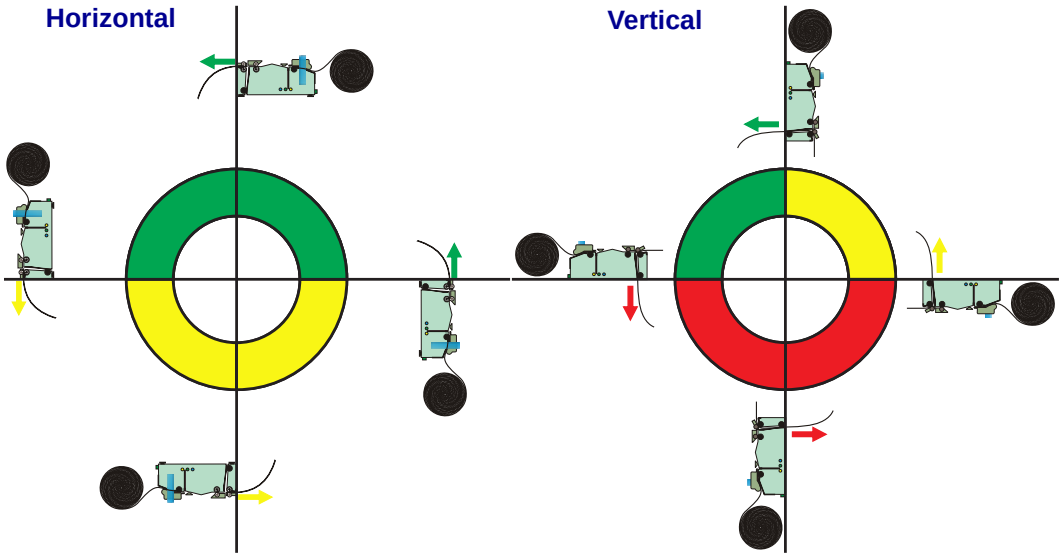


Figure 5-5 • Small Core Media Adapter



Media Guide - Required Accessory

For the printer to operate correctly, at minimum you must order and install at least one of the four (4) media guides listed below.

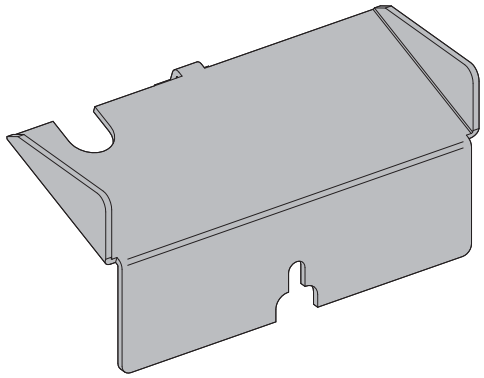


Figure 5-6 • Media Guide

Width (mm)	Part Number	Width (mm)	Part Number
58	09170-058-3	80	09170-080-3
60	09170-060-3	82.5	09170-082-3

A printer evaluation kit is available for the KR403 printer that includes all four media guides.

Installing the Media Guide

A calibration routine is required after installing the appropriate media guide. See "Media Guide Calibration" on page 51 for details.

Caution • Before proceeding, always disconnect the printer from power. If the printer is installed in the kiosk, then all kiosk power should be turned off. This is to prevent accidentally having the screw or media guide bracket fall into the printer or other powered up kiosk components. The screw or bracket may fall and bounce into kiosk components mounted adjacent to or mounted below the printer.

1. Select the media guide that matches the width of the media you want to use for your application. Loosen or remove the media guide screw, if present.

Note • Media guides are ordered separately. Only the KR403 Demo Kit (P1021954) contains all input guides available for the KR403.

2. Open the printhead by pushing green printhead release push-bar back towards the rear of the printer and lift up the printhead.

3. Insert the media guide under the printhead. Insert the T-shaped tab of the media guide into the “T”-hole, slide it forward, and fasten the screw. The screw is pre-installed at the factory on the printer. One is included in the bag with the media guide in case the screw is damaged or lost. Many times, the installer will only need to loosen the attached screw.

4. Close the printhead. Push down on the push-bar to securely latch the printhead closed.

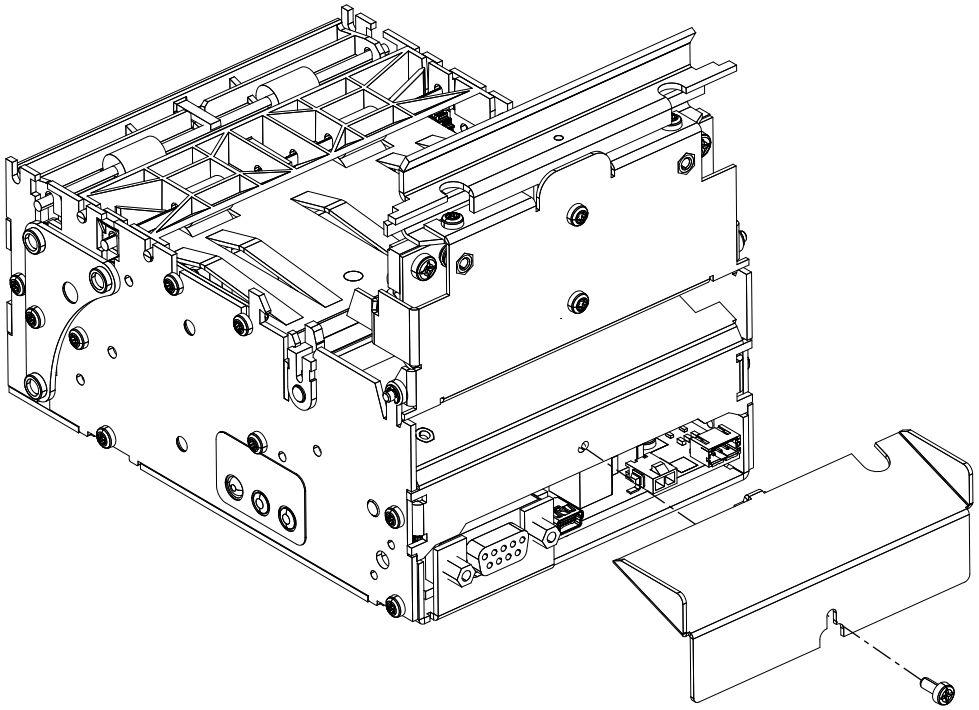


Figure 5-7 • Media Guide Installation

5. Re attach the printer’s power if needed.

Media Guide Calibration

When the media guide is changed, the printer will signal media present even when none is. You must instruct the printer to detect the sensor it should use again. This is accomplished with the two flash function (see Table 7-2, Application User Interface on page 89).

This process must be done without media in the printer. If the process is attempted with media in the printer an error will occur. Upon successful detection of the guide, guide settings are stored.

Determining Thermal Media Types

The KR403 printer uses direct thermal media. Direct thermal media has a chemically treated print surface that uses heat to expose or darken the area where heat is applied. Thermal transfer media or ordinary un-treated paper requires ribbon or ink for printing while direct thermal media does not. To determine what type of media is being used and print surface of the media, perform a media scratch test:

1. Scratch the print surface of the media with a finger nail or pen cap. Press firmly and quickly while dragging it across the media surface. Direct thermal media is chemically treated to print (expose) when heat is applied. This test method uses friction heat to expose the media.

2. Did a black mark appear on the media?

If a black mark...	Then the media is...
Does not appear on the media	**Thermal transfer**. A ribbon or ink is required and is not support for use by the KR403.
Appears on the outside of the media.	**Direct thermal**. No ribbon or ink are required.

The KR403 printer only uses outside wound roll media or fan-fold media. The print surface faces away from the center of the printer. Media with black marks

Black Mark Media Requirements

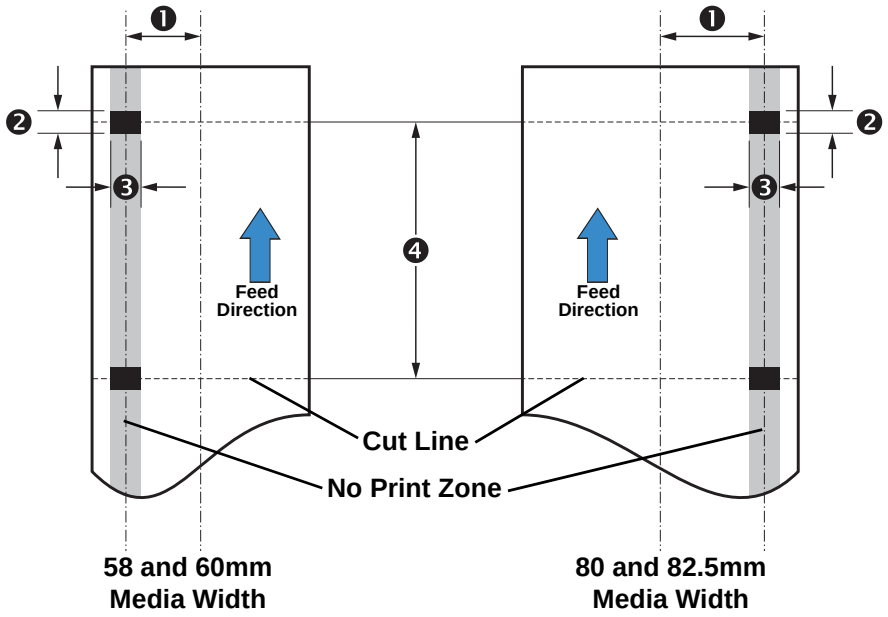
The printer is optimized to detect black marks printed with IR sensitive ink and ignore pre-print in IR blind ink.

For 80 and 82.5mm media, the black marks will be centered 30mm to the right of the paper center when viewing the imaged side of the receipt and print direction is downward; for 58 and 60mm media, the black marks will be centered 22mm to the left of the paper when viewing the imaged side of the receipt and the print direction is downward.

The printer will support media with black mark thickness in printing direction of 2.5 – 9.0mm, and a width of 5.0 – 10.0mm when the black mark is centered on the sensor.

In the figure below, the “No Print Zone” is the area on the backside of the media where no marks (other than the black marks for sensing) should be printed.

For media that has both perforations and black marks, perforations should be positioned in the middle of the black mark. By default, the printer will cut the media in the middle of the black mark.



Example shown from printed side. Black marks shown are on opposite side.

Dimension	58 and 60mm Width	80 and 82.5 Width
1	22 mm	30mm
2	2.5mm – 9.0mm	2.5mm – 9.0mm
3	5.0mm – 10.0mm	5.0mm – 10.0mm
4	92mm – 600mm	92mm – 600mm

Preparing a Media Roll for Use

1. Orient the roll as shown below.

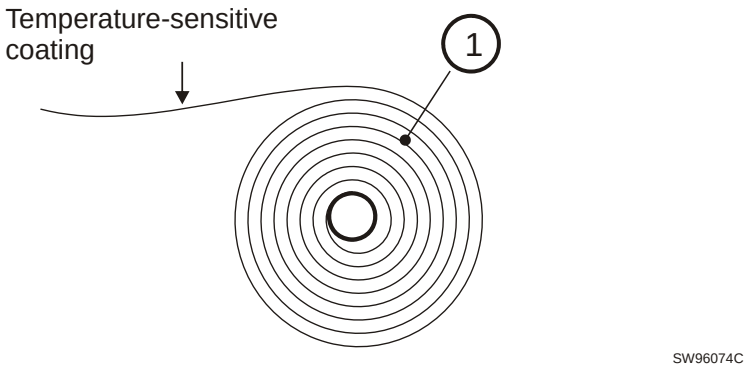


Figure 5-8 • Paper Roll Orientation

2. Tear off a full turn of paper from the new roll.

Caution • This is important since the outer end of the paper is usually fixed to the roll with some type of glue or self-adhesive substance that might otherwise cause paper jam or even print head damage.

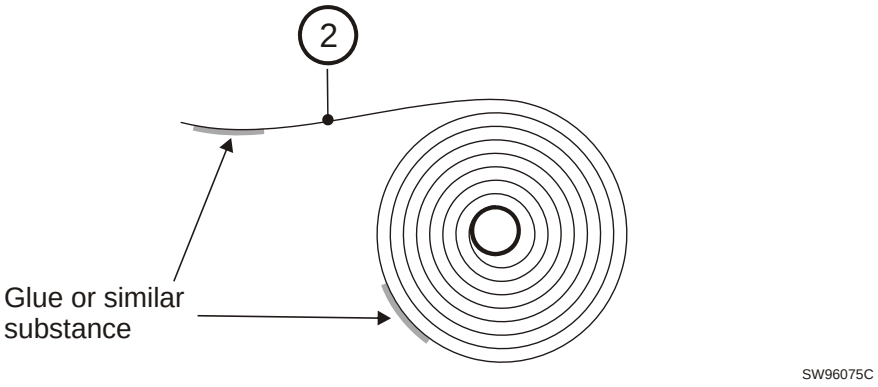


Figure 5-9 • Full Turn Paper Removal

3. The loading process works best with the cut as a square, straight edge. Cut the paper in a suitable angle.

   If the media is not cut square and the operator does not have the ability to cut or tear a straight edge, then the printer can fail to load the media or even cause a media jam. The media should not make contact with the platen roller before the sensor detects the media. The distance between the platen roller and media sensor is approximately 10 mm (0.39 inches).

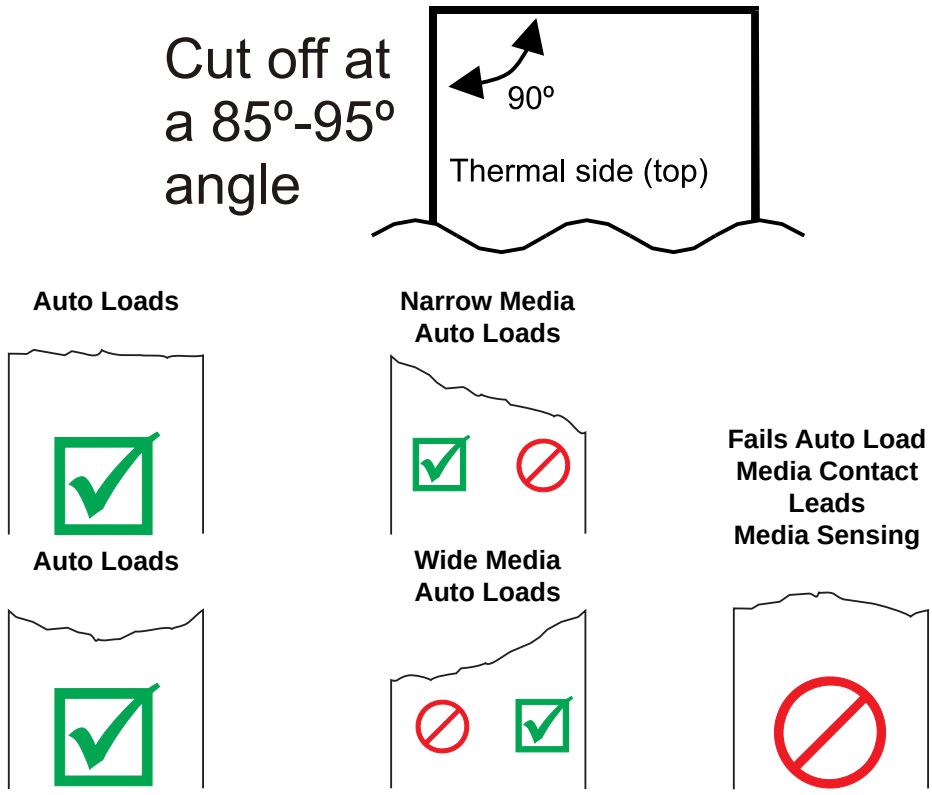


Figure 5-10 • Suitable Paper Edge for Auto Load

Important • The wide media sensor (88 and 82.5 mm) and printer's power connector are both located on the right side of the printer when looking into the printer from the rear. The media sensor for narrow media (58 and 60 mm) is located on the left side when looking into the media input slot from the rear of the printer.

Automated Media Loading

The printer is designed to detect media when it is inserted into the empty media input slot at the front of the printer. The printer begins turning the platen (drive) roller when the leading edge of the media passes over the media sensor.

1. Insert the paper through the paper entry opening at the front of the printer.

   The printer will now feed, cut and eject a blank receipt or a printout of the last print job in the print buffer, and then automatically go to a Ready state (solid green status indicator).

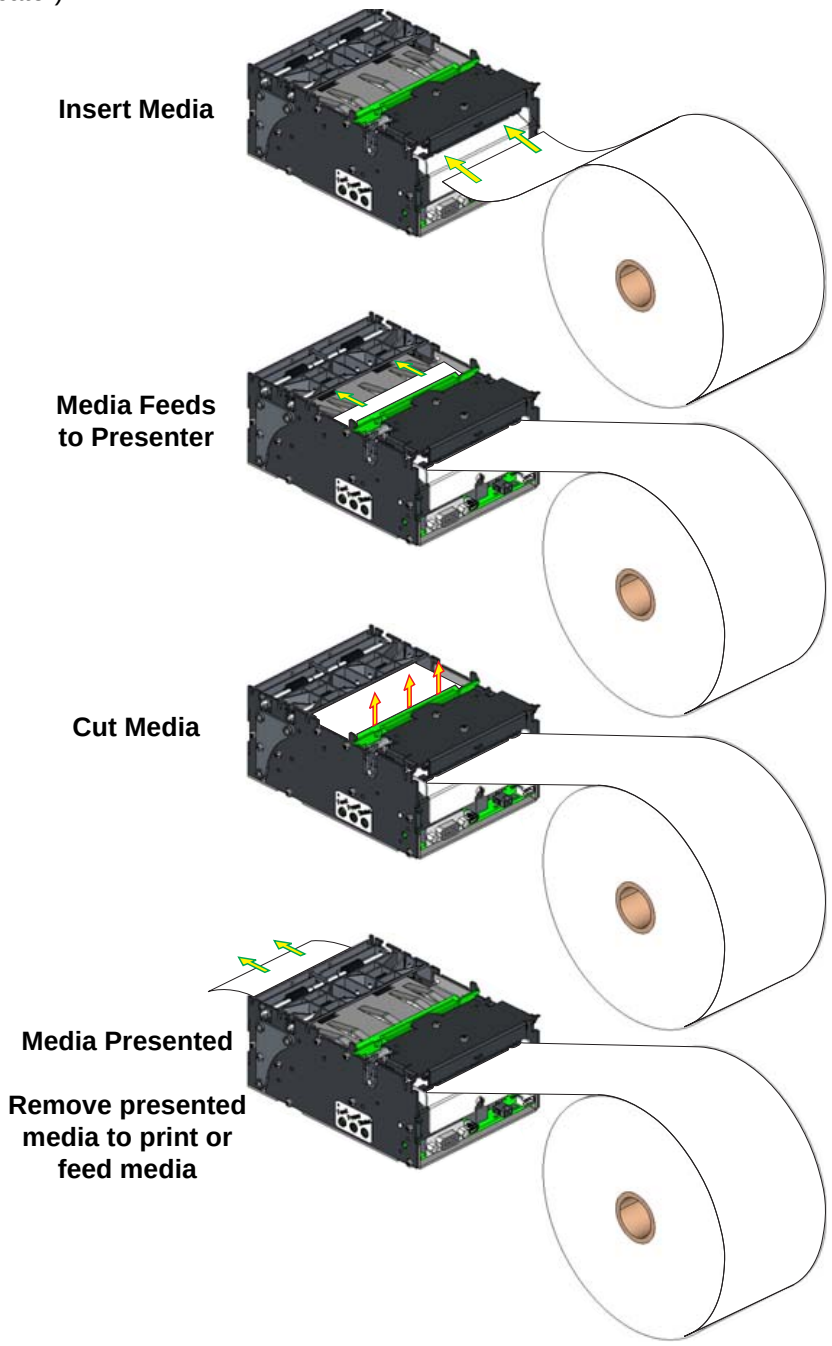


Figure 5-11 • Automated Media Loading

Manual Media Loading

Manual media loading is intended for maintenance operations, such as printhead cleaning and removing media jams. Please use the Auto Load procedure (page 56) to load media for normal operations.

1. Open the printhead.
2. Insert the media through the front of the printer and under the open printhead. Pull the media just past the cutter and platen (drive) roller.
3. Close the printhead. Push down on the push-bar to securely latch the printhead closed.
4. Press the Feed button once to get the printer out of Pause mode (double blinking green status indicator. The printer will feed 70 mm of media and cut the media. Discard the receipt scrap.

   Pressing the Feed once more will reprint that image to the proper paper size.

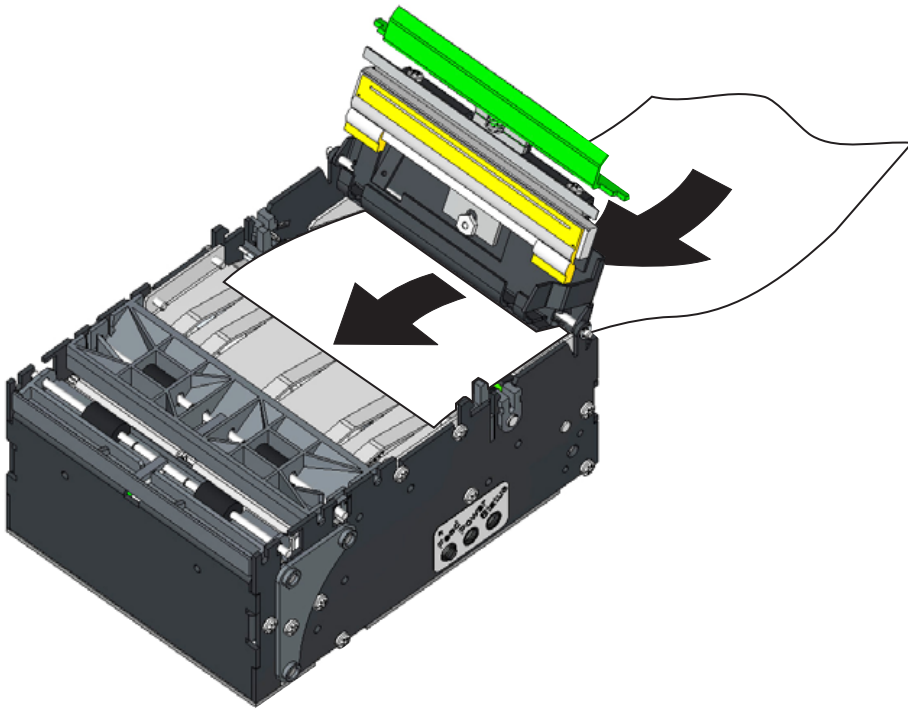


Figure 5-12 • Manual Media Loading

Clearing Paper Jams

Should a paper jam occur, follow the procedure below:

1. Cut or tear the media off the front of the printer.
2. Open the printhead.
3. Remove and discard the damaged media.
4. Close the printhead and reload the media using the Auto Load media loading method (page 56).

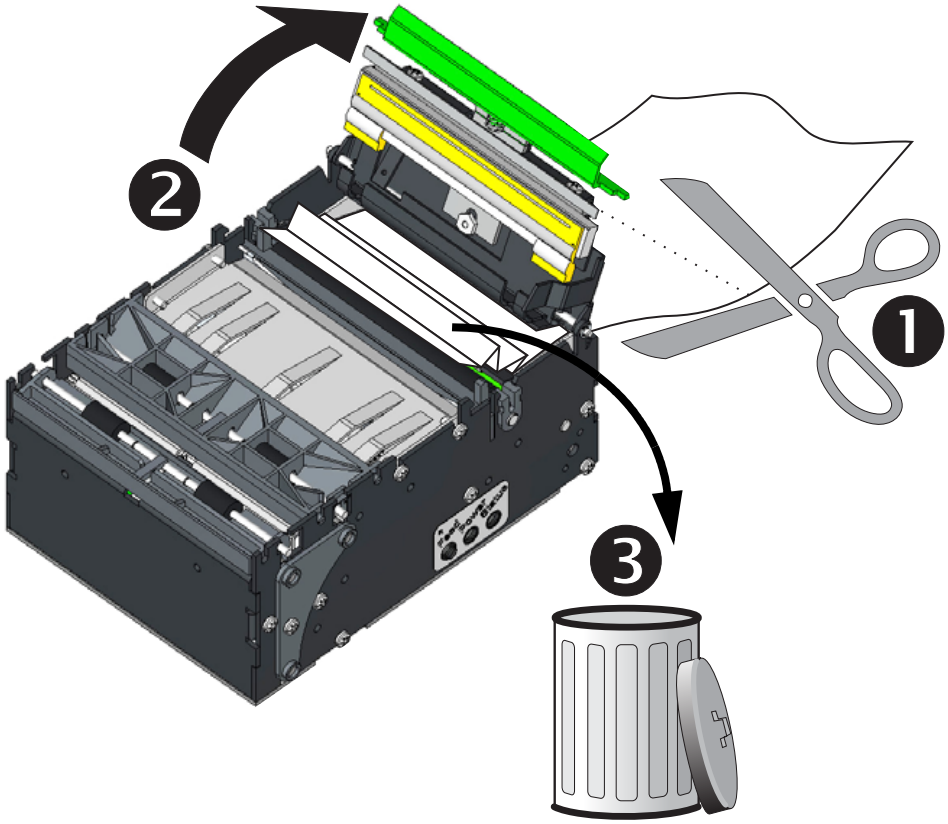


Figure 5-13 • Clearing Paper Jams

Printing a Test Receipt

Before you connect the printer to your computer, make sure that the printer is in proper working order.

You can do this by printing a test (printer configuration) receipt.

1. Make sure the media is properly loaded and Ready with the printhead closed. Then, turn the printer power on if you have not already done so. If the printer initializes with the status light blinking green (pause mode), press the Feed button once to set the printer in Ready (to print) mode.

2. Press the Feed button to print, present and removal of receipts two to three times to allow the printer to calibrate the printer for the installed media. The printer may feed several extra receipts during this process if media calibration needs to be adjusted (this is an automatic printer feature).

3. When the status light is solid green, press and hold the Feed button until the status light flashes once.

4. Release the Feed button. A printer configuration receipt will print (example shown).

The configuration status receipt will print as two or more receipts if the receipt size is not large enough to contain all of the status information as shown above.

```
PRINTER CONFIGURATION

Zebra Technologies
ZTC KR403

20.0..............  DARKNESS
6 IPS.............  PRINT SPEED
+000..............  TEAR OFF
KIOSK.............  PRINT MODE
000...............  CUT AMOUNT
008...............  CUT MARGIN
EJECT.............  PRESENT TYPE
000...............  PRESENT TIMEOUT
050...............  LOOP LENGTH
000...............  LENGTH ADDITION
HORIZONTAL........  ORIENTATION
VARIABLE LENGTH....  MEDIA TYPE
MARK..............  SENSOR TYPE
MANUAL............  SENSOR SELECT
640...............  PRINT WIDTH
1225..............  LABEL LENGTH
39.0IN   989MM....  MAXIMUM LENGTH
NOT CONNECTED.....  USB COMM.
115200............  BAUD
8 BITS............  DATA BITS
NONE..............  PARITY
XON/XOFF..........  HOST HANDSHAKE
NONE..............  PROTOCOL
<~>  7EH..........  CONTROL CHAR
<^>  5EH..........  COMMAND CHAR
<,>  2CH..........  DELIM. CHAR
ZPL II............  ZPL MODE
NO MOTION.........  MEDIA POWER UP
NO MOTION.........  HEAD CLOSE
BEFORE............  BACKFEED
+000..............  LABEL TOP
+0000.............  LEFT POSITION
NO................  HEXDUMP
050...............  WEB S.
095...............  MEDIA S.
000...............  WEB GAIN
050...............  MARK S.
075...............  MARK GAIN
095...............  MARK MED S.
075...............  MARK MEDIA GAIN
090...............  CONT MEDIA S.
071...............  CONT MEDIA GAIN
066...............  TAKE LABEL
CWF...............  MODES ENABLED
.................  MODES DISABLED
640 8/MM FULL.....  RESOLUTION
V66.17.1ZP25 <-....  FIRMWARE
1.3...............  XML SCHEMA
V20.00.0..........  HARDWARE ID
CUSTOMIZED........  CONFIGURATION
2104K.....R:  RAM
1536K.....E:  ONBOARD FLASH
NONE..............  FORMAT CONVERT
DISABLED..........  ZBI
2.1...............  ZBI VERSION
4,502 IN..........  LAST CLEANED
4,502 IN..........  HEAD USAGE
4,502 IN..........  TOTAL USAGE
4,502 IN..........  RESET CNTR1
4,502 IN..........  RESET CNTR2
95J09180020.......  SERIAL NUMBER
MAINT. OFF........  EARLY WARNING
2009-09-02 15:43:39 TIME STAMP
FIRMWARE IN THIS PRINTER IS COPYRIGHTED
```

Figure 5-14 • Test Receipt

6

Accessories

Accessories Overview

The KR403 printer has a wide range of accessories designed and tested to work with your printer. The accessories can be used by themselves, combined with other printer accessories, or as part of your own unique printer integration design. At the time of this guides release, the following accessories are available for your printer:

- Nozzle Bezel – A translucent media exit bezel styled after common credit card input bezels used in ATM (Asynchronous Transfer Mode) machines and other kiosks.
- Shutter Bezel – The shutter bezel is a light weight door designed to prevent the kiosk user from easily inserting foreign objects into the printer, dust, or block external light sources from interfering with the printer's ability to detect when is media exiting the printer.
- Small Core Media Roll Adapter – Designed to guide the leading edge of receipt into the input of the media present rollers. Allows the use of media roll inside diameters less than 25 mm (typically POS media) and increases the operational range of printer in a given mounting orientation (see "Mounting Orientations" on page 48).
- Quick-Fit Printer Mounting – A quick printer release mounting system that can be used with KR403 mounting accessories or with your own design. The service tech can pull the leaf spring (latch) to unlock the printer and quickly slide it out for easy replacement or service. the parts can be ordered separately as:
    - Quick-Fit Hubs – Flanged hubs and printer mounting screws
    - Leaf Spring Retainer – Spring and two M3 x 3 mm screws
- Roll Support – A rugged media roll support bracket designed to provide minimal friction and self centering of the media roll.

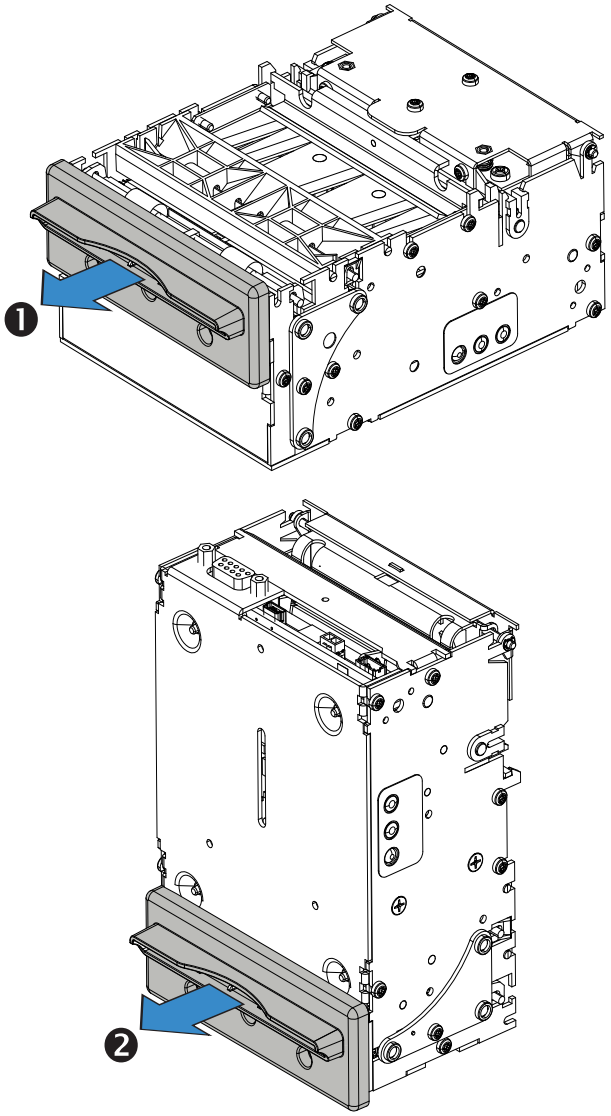
- Media Roll Low Sensor – Optical sensor designed to mount into the Roll Support accessory or other KR403 printer mounting accessory and plug directly into the rear of the printer.
- Universal Roll Holder – This versatile mounting accessory supports three roll positions with the ability to mount it on either side of the printer.
- Printer Mounting Plate (for roll holder mounted below printer) – This mounting plate assembly is designed to work with the Universal Roll Holder accessory when the roll is in the Low and Under holder positions. It includes a inertia dampening spring roller to optimize printer performance when using the large 250 mm diameter rolls.
- Wall Mount Roll Holder – The wall mount supports a maximum media roll diameter of 150 mm. The wall mounting bracket attaches at the front of the printer flush to the kiosk wall.
- Printer Power Supply (70 watts) – This printer accessory has been optimized for use with thermal printers and in particular your KR403 printer. It has been designed and tested to meet or exceed most international safety and compliance standards. Please check for more detailed safety and compliance information for the printer and this power supply at the Zebra Web site: www.zebra.com.
- USB Cable – This accessory has been thoroughly tested for use with the 2824 Plus printer.
- Large Media Roll Adapter and Mounting Plate – Designed for use with the printer when using large (200mm) media rolls to prevent excessive pulling force by the feed motor.

Nozzle Bezel – P1011185

The nozzle bezel is used not only as a decorative accessory, but also serves to prevent customers from unknowingly inserting payment cards into the printer; which could cause damage to the printer and the customer's payment card.

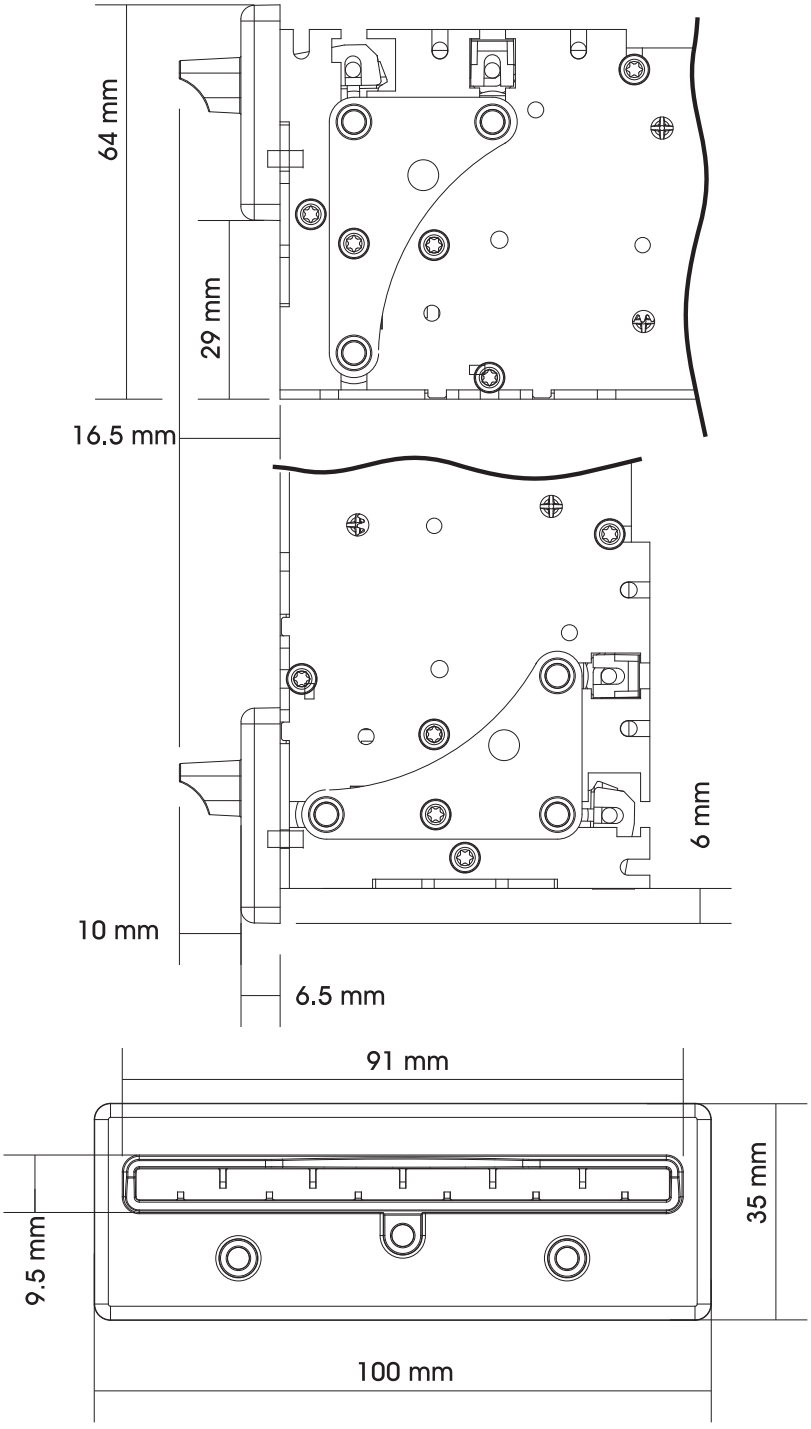
The nozzle bezel is installed on the front of the printer (at the media exit) using two 2.5mm hex screws.

The nozzle bezel kit comes with screws and 10 bezels per kit.



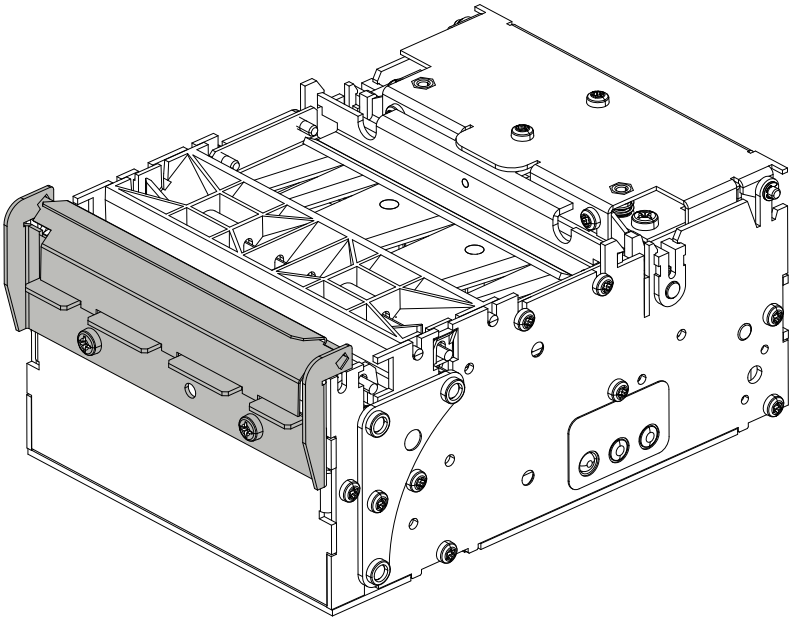
❶	Media Exit Horizontal Mounting	❷	Media Exit Vertical Mounting

Nozzle Bezel Mounting Dimensions

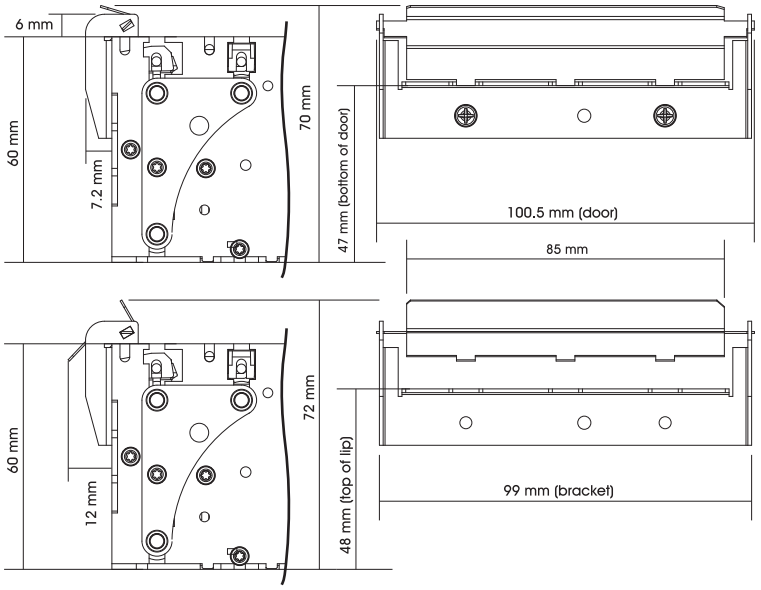


Shutter Bezel – 104591

Supports vertical mounting orientations only.



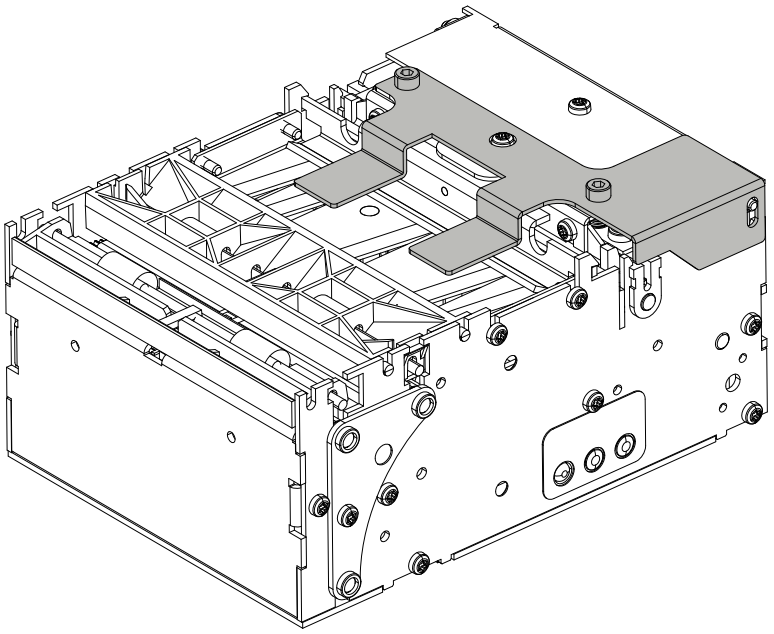
Shutter Mounting Dimensions



Small Core Media Adapter – G105156

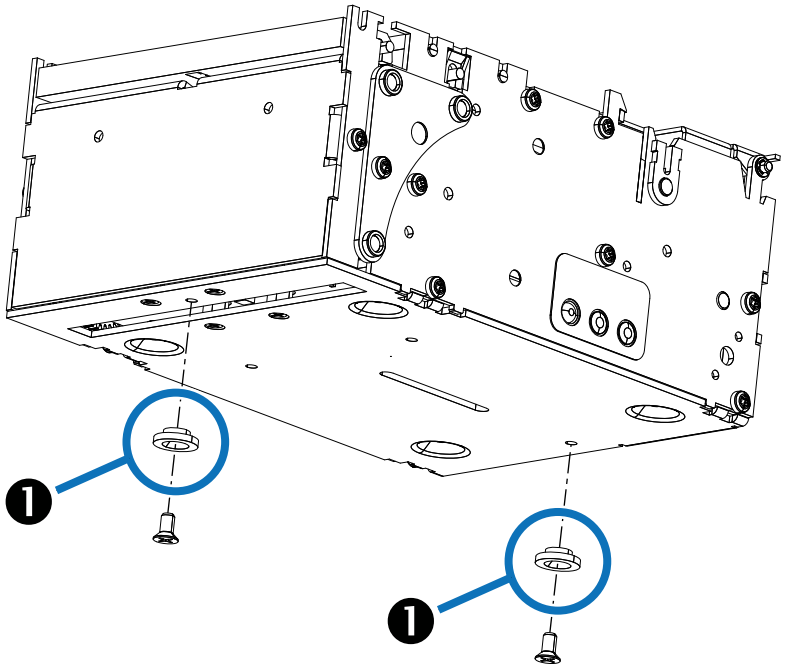
The KR403 mounting becomes even more versatile if the Small Roll Media Roll Adapter accessory is used to guide the leading edge of receipt into the input of the media drive rollers. This allows the printer to be mounted in a wider range of mounting orientations shown below.

The small core media roll adapter accessory is used to prevent the page curl that occurs at the end of a tightly wound media roll. It is used to keep the media in position to feed into the presenter.



Quick-Fit Hubs – 103939

The quick-fit hubs ❶ are designed to use the printer's mounting holes when mounted on a sheet metal surface 1.5 mm thick. See the "Design Your Own Mounting" on page 19 for more details.

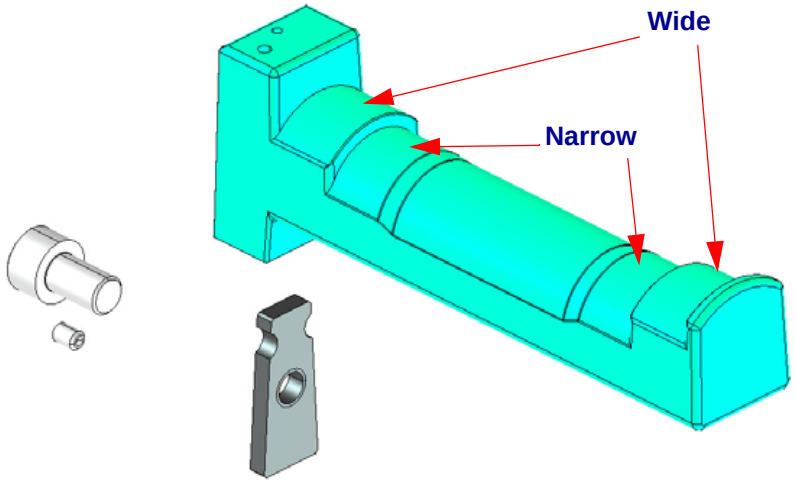


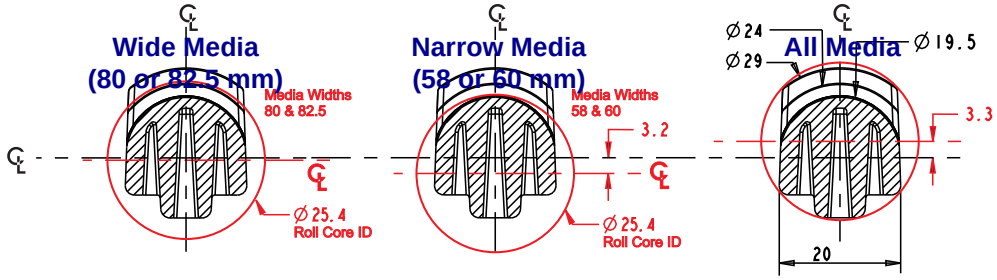
Quick Fit Leaf Spring Retainer – 01473-000

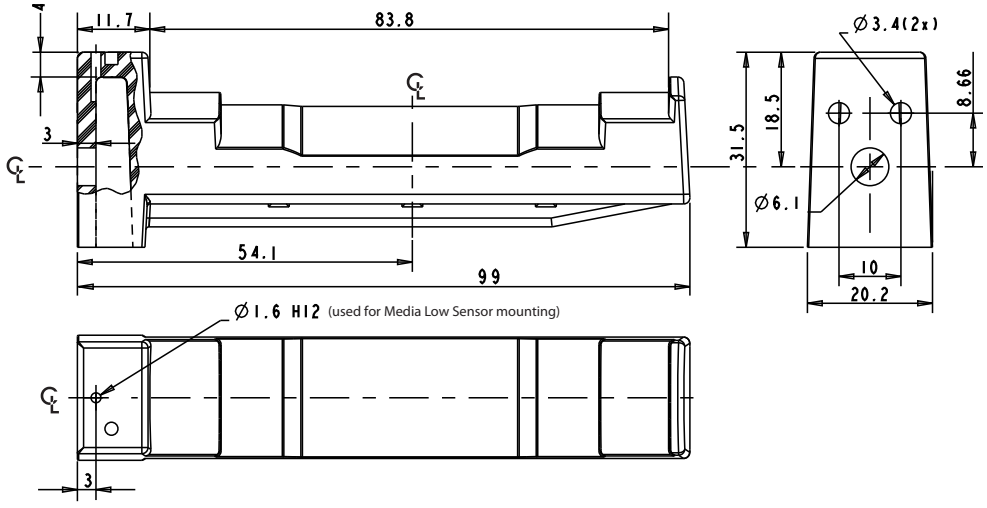
The leaf spring retainer is designed to be used as a locking mechanism when using the quick-fit hubs on a custom mounting surface.

Roll Support – P1014124

The roll support bracket and mounting are designed (and tested) to mount to a sheet metal wall 1.5 mm thick for media rolls up to 250 mm O.D. (Outer Diameter) with media roll cores of 25.4 mm I.D. (Inner Diameter). The wider approved media roll widths (80 and 82.5 mm) align to the vertical centerline of the roll support bracket. The diagrams below show the how the narrower approved media roll widths are offset lower by 3.2 mm. To install a roll of media in the printer, the roll must clear the lip. The media roll needs to move up nearly 4 mm above the centerline of the roll support bracket for loading.







Media Roll Low Sensor

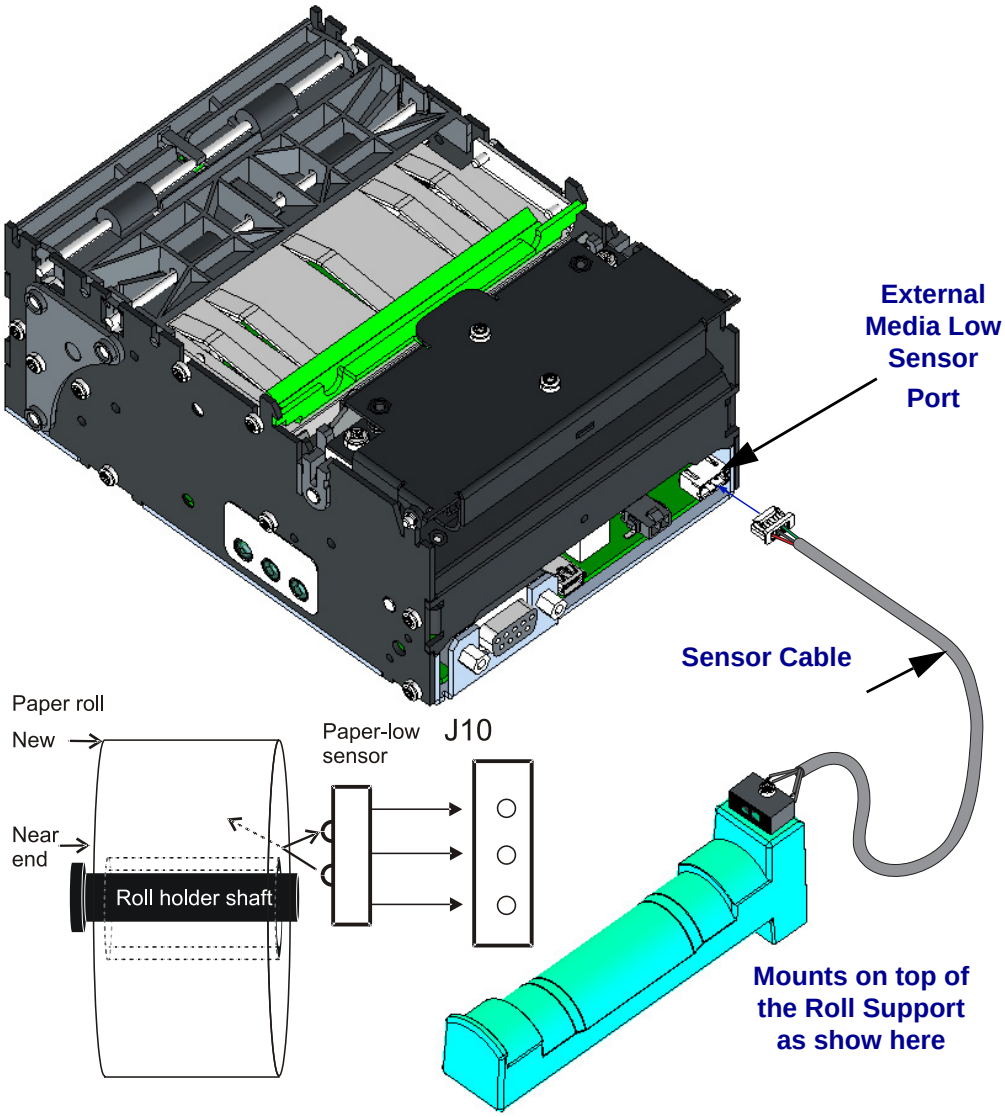
The media roll low sensor is available in two lengths:

- 01890-300 – KIT PAPER-LOW SENSOR 300MM CBL
- 01890-500 – KIT PAPER-LOW SENSOR 500MM CBL

The sensor alerts the system when a fixed level of media is remaining on the roll.

The media roll low sensor operates by reflecting a light against the white side of a media roll to detect it. When the media is low, no light is reflected. After three successive media low conditions are noted by the printer, a media low flag is set. Installing a new roll of media will reset the flag.

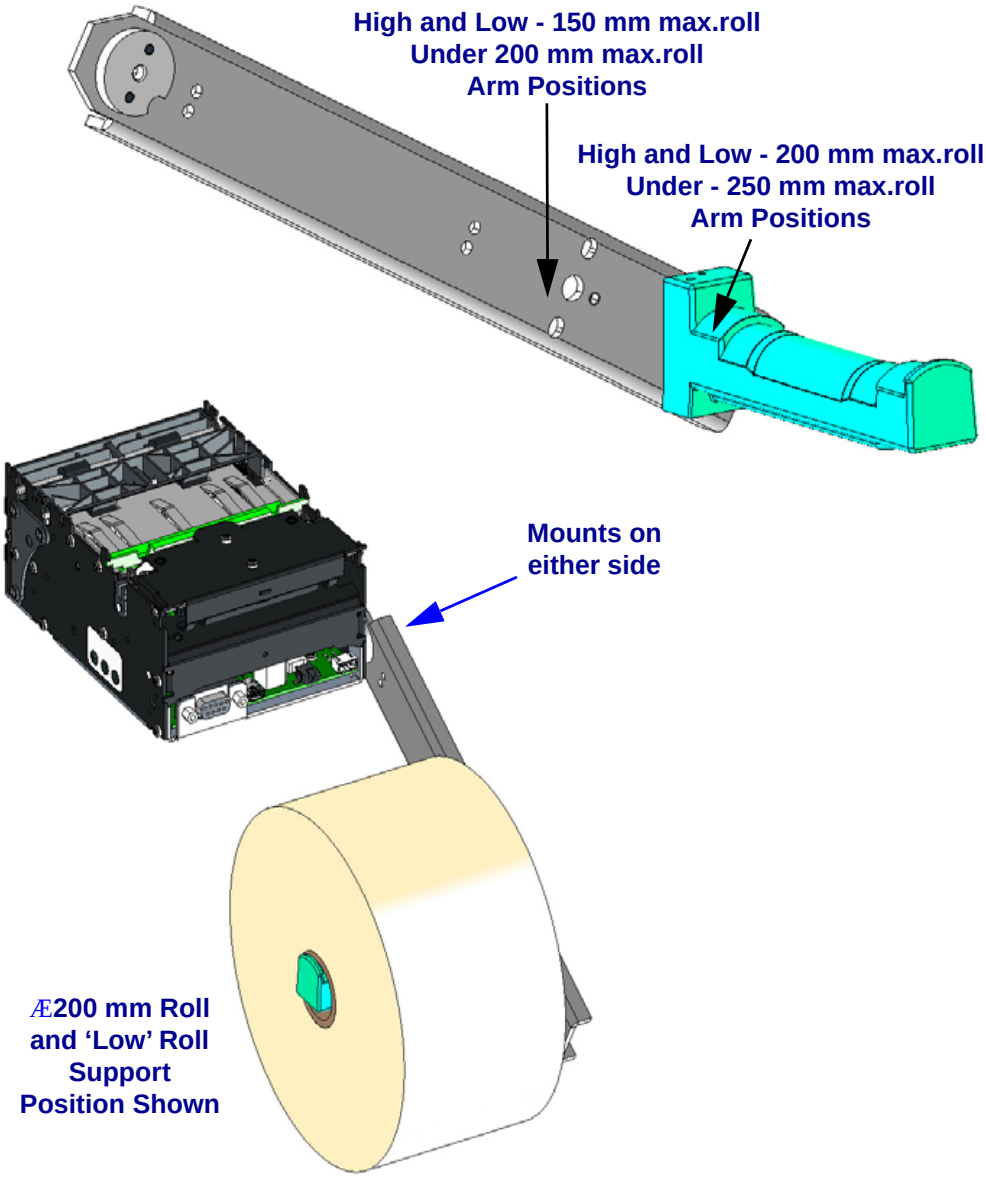
Note • Black marks or dirt on the side of the media roll may signal false media low conditions.


External
Media Low
Sensor
Port
Sensor Cable
Paper roll
New
Near
end
Roll holder shaft
Paper-low
sensor
J10
Mounts on top of
the Roll Support
as show here

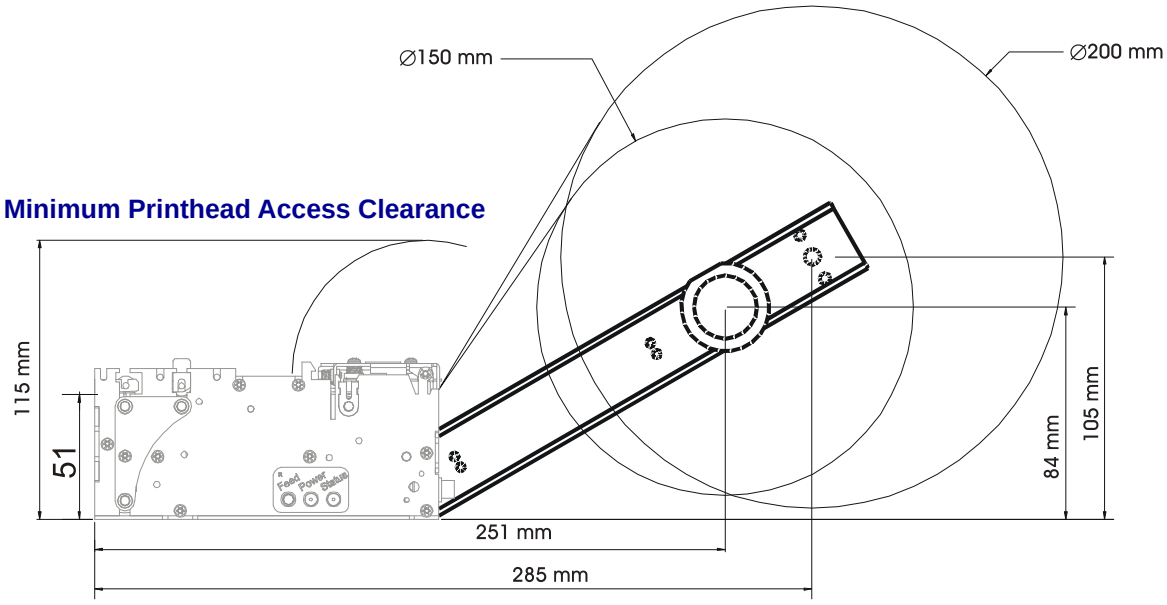
Universal Roll Holder – P1014125

This roll holder can be fitted on the right or left side of the printer. The arm can be set at three different angles. This makes make integration in the kiosk easy.

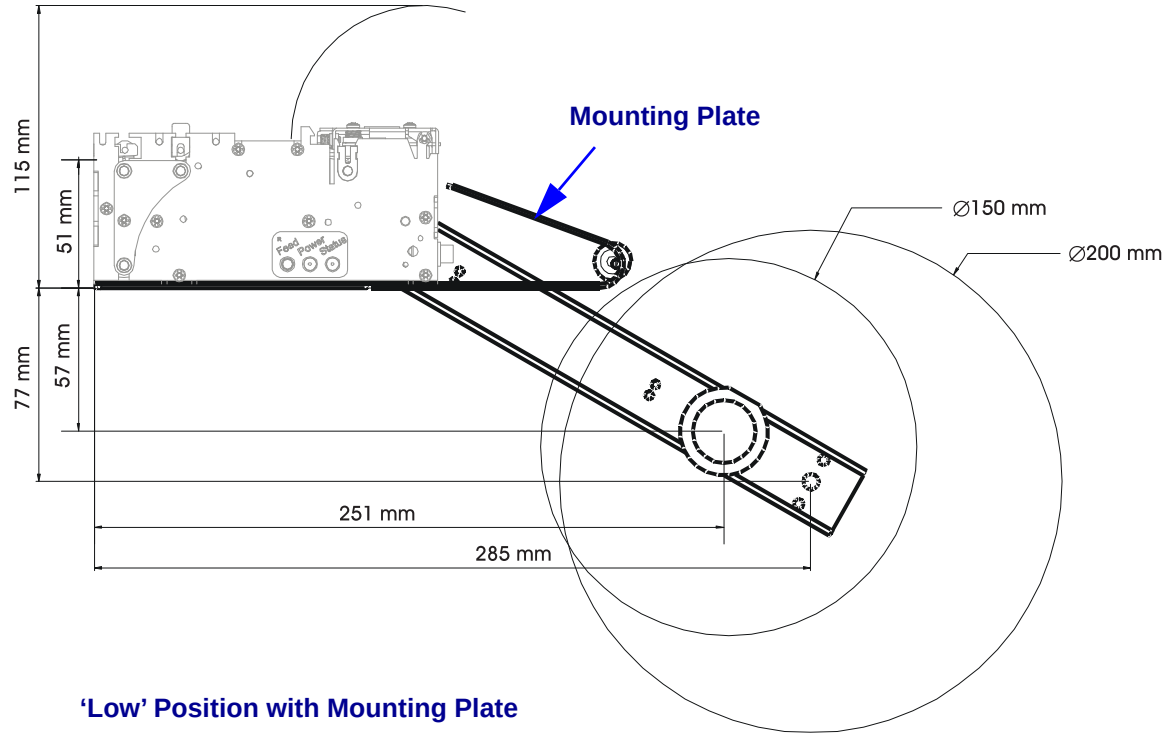
- 58 mm, 60 mm, 80 mm, and 82.5 mm media widths can be used without adjustments.
- The universal roll holder supports up to Ø200 mm rolls in the ‘high’ and ‘low’ arm positions, and Ø250 mm rolls in the ‘under’ position with clearance for cabling.
- No other accessories are required for the ‘high’ arm position, while the Printer Mounting Plate with the inertia dampening spring guide and cable shield is needed in the two other positions.
- The optional media roll low sensor can be added to the roll support.



‘High’ Position (No Mounting Plate)



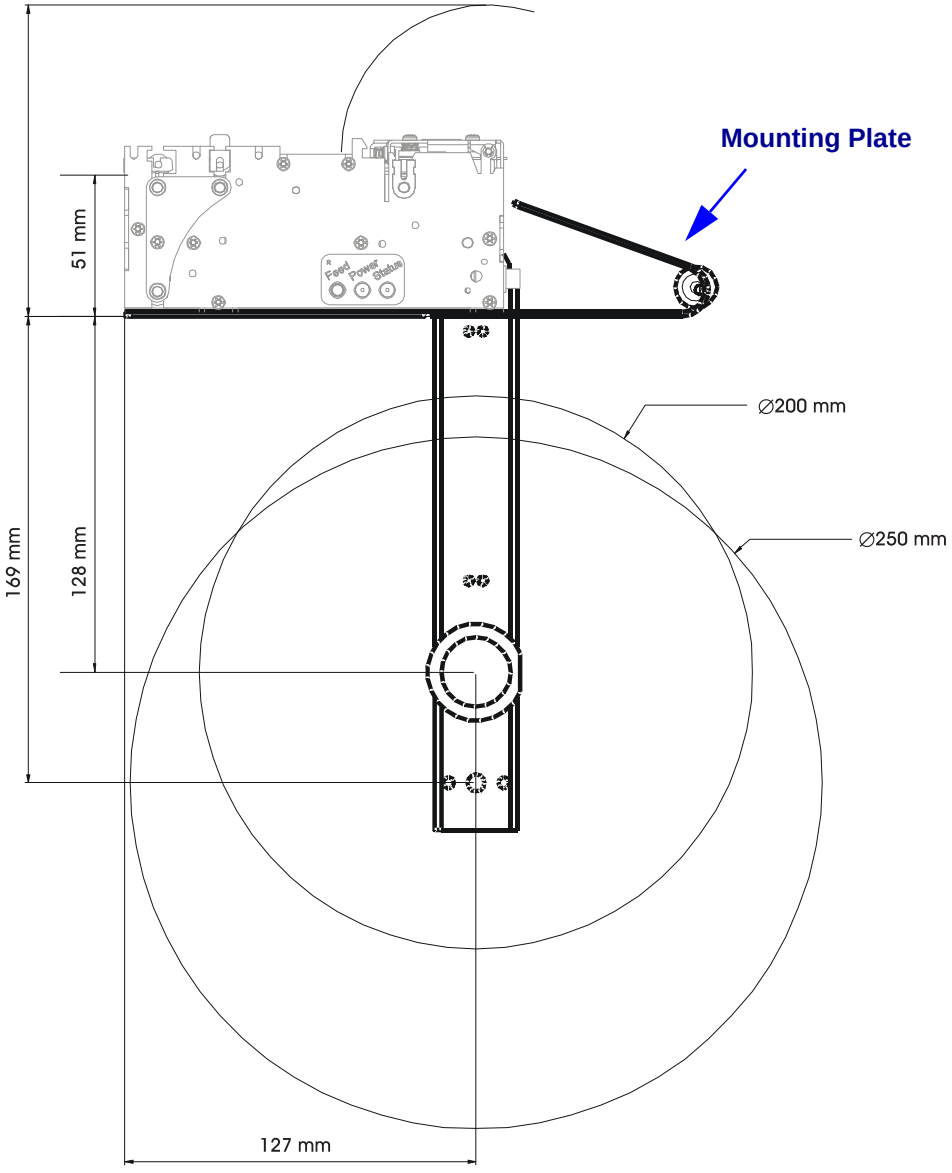
Minimum Printhead Access Clearance

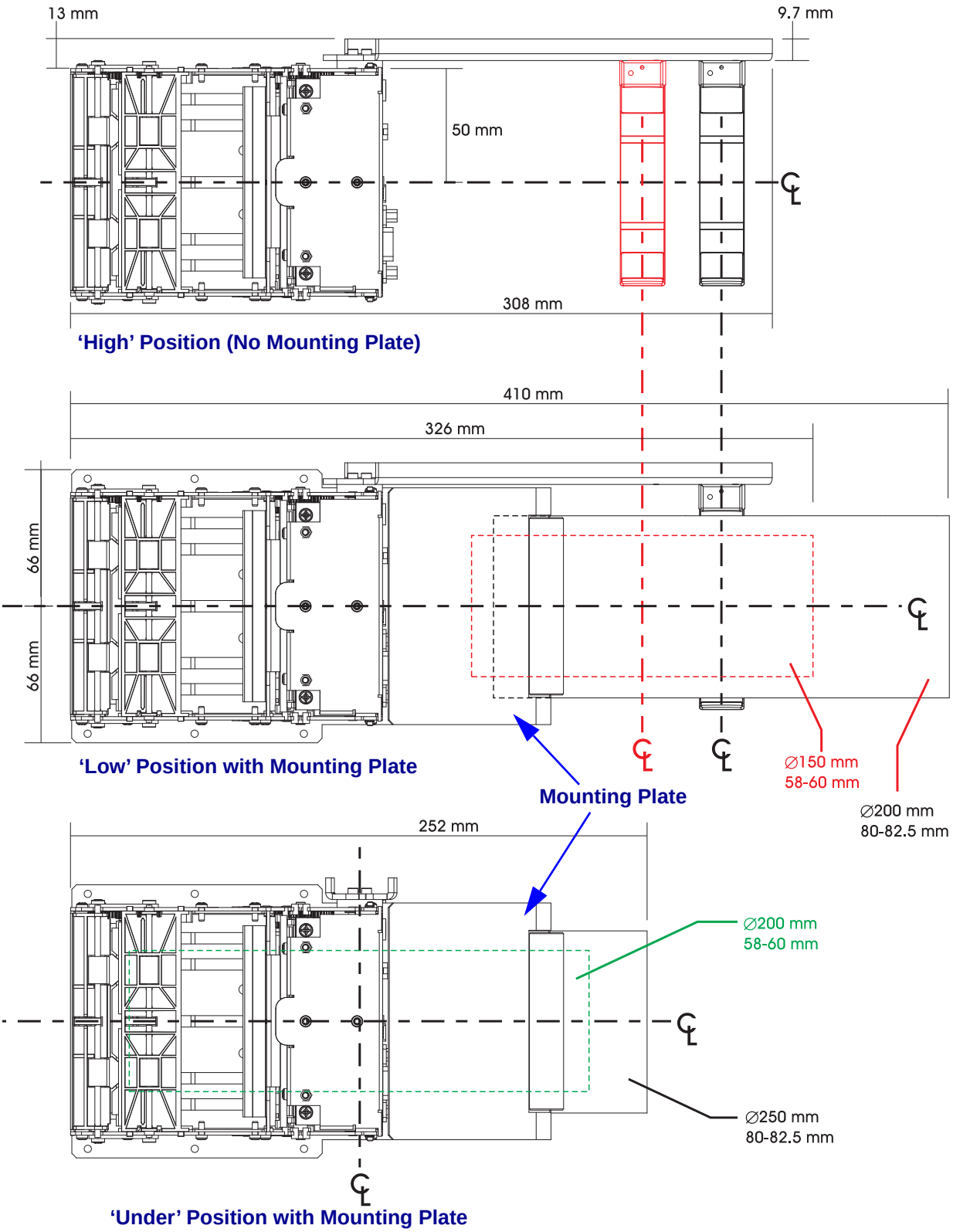


‘Low’ Position with Mounting Plate

‘Under’ Position with Mounting Plate

Minimum Printhead Access Clearance



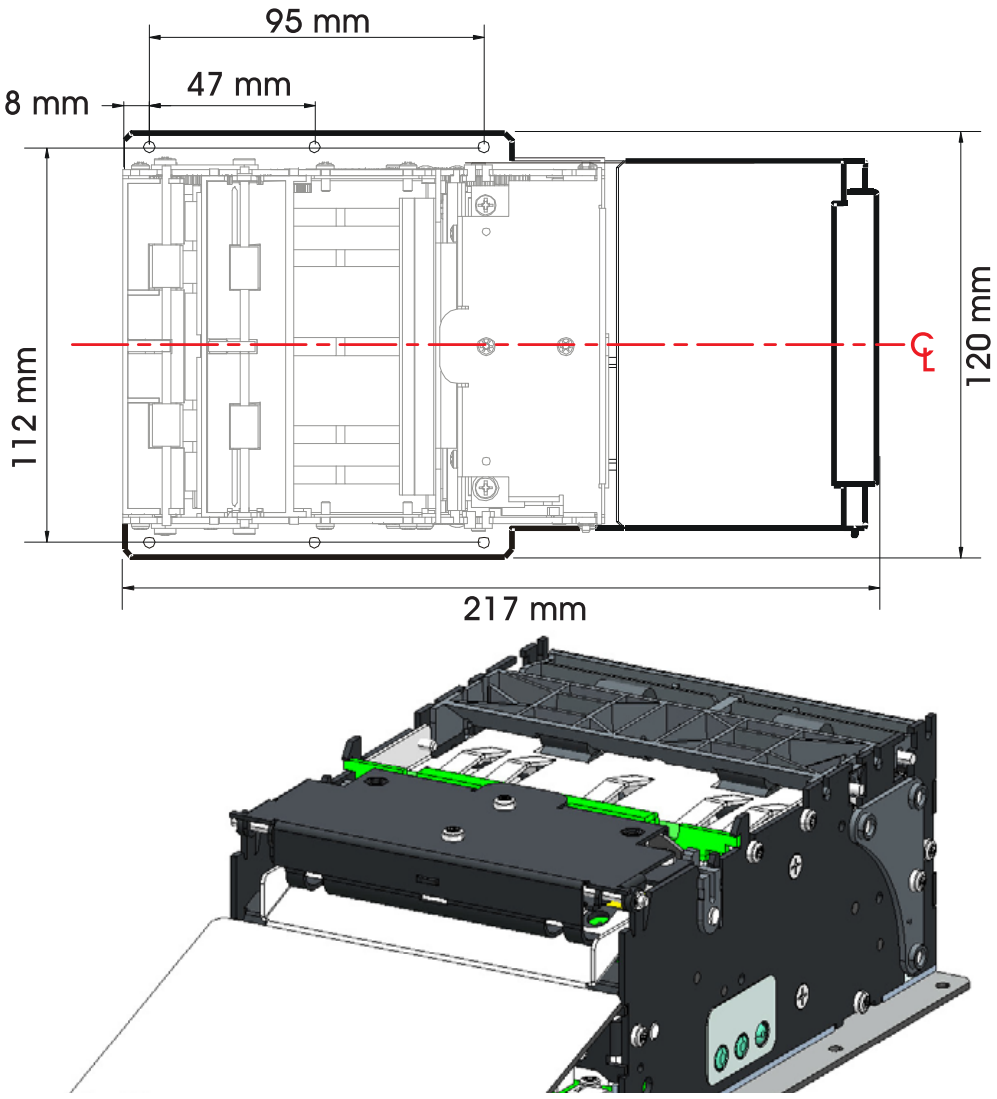


For illustration purposes:
— 'High' position - media is not shown
— 'High' position - both roll supports are shown

Printer Mounting Plate – 104208

The Printer Mounting Plate preforms several functions:

- Provides a solid printer mounting base.
- Designed to work with the Universal Roll Holder accessory for the ‘Low’ and ‘Under’ the printer mounting positions.
- This plate or an equivalent custom design is required to protect the cables and media from interfering with each other and the operator when the media roll is mounted under the printer.
- Includes a inertia dampening spring roller to optimize printer performance when using the large 250 mm diameter media rolls.

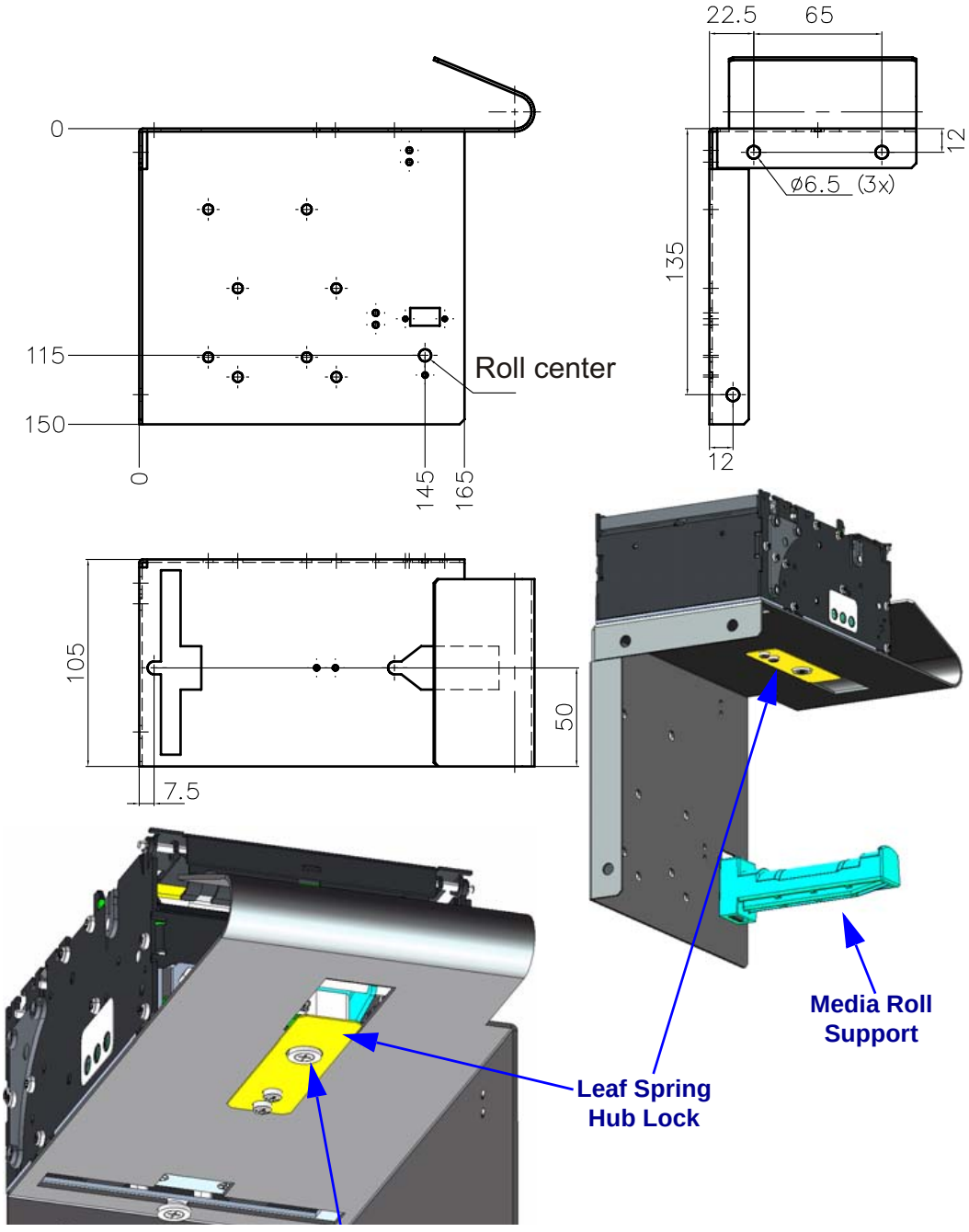


Wall Mount Roll Holder – P1014123

The Wall Mount Roll Holder attaches at the front face of the printer to the kiosk wall. It is designed to handle 150 mm diameter media rolls.

58 mm, 60 mm, 80 mm, and 82.5 mm media widths can be used without adjustments.

Include the Quick-Fit printer release and mounting system. The service tech can pull the leaf spring (latch) to unlock the printer and quickly slide it out for easy replacement or service.



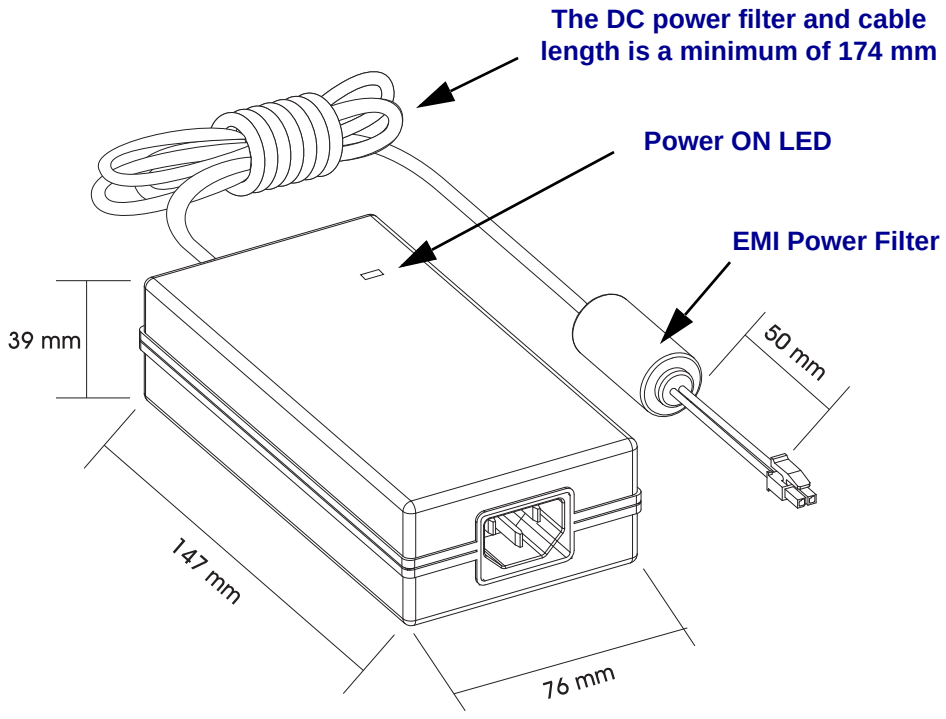
Printer Power Supply – 808099-004

The KR403 power Supply accessory can easily be incorporated into a kiosk design. The power supply is easily attached to the kiosk with tie wraps.

The power supply has been tested to work with the KR403 printer and complies with all of the same safety and compliance regulations.

See "Attaching Power" on page 34 for a simple power connection illustration.

- Output voltage: 24 VDC
- 70 Watts, 90-264 VAC at 47-63 Hz
- Peak Power 330 Watts
- Input Current: 1.5 Amp max.
- Inrush Current: 40 Amp max.115 VAC or 80 Amp max.230 VAC



Attaching the Power Supply

1. Make sure the printer's power supply is turned off. Or if you are using the optional power supply accessory shown in the illustration below, make sure the power supply's AC power cord is unplugged. Note the printer does not have an integrated power switch.

2. Insert the 24 VDC power supply's power connector into the printer's power receptacle. Verify the power plug's latch has locked to the connector by giving it a slow gentle pull.

3. Insert the AC power cord into the power supply. Plug the other end of the cord into an appropriate AC electrical outlet. The active power light will go on if power is on at the AC outlet.

4. With the power supply on and connected to the printer, the printer's power status indicator will light up green. The printer will begin the printer initialization process which takes approximately 25 seconds. The printer will test the cutter and check for the presence media. The status indicator will be green if media is loaded and flashing red (single blink) if media is not loaded.

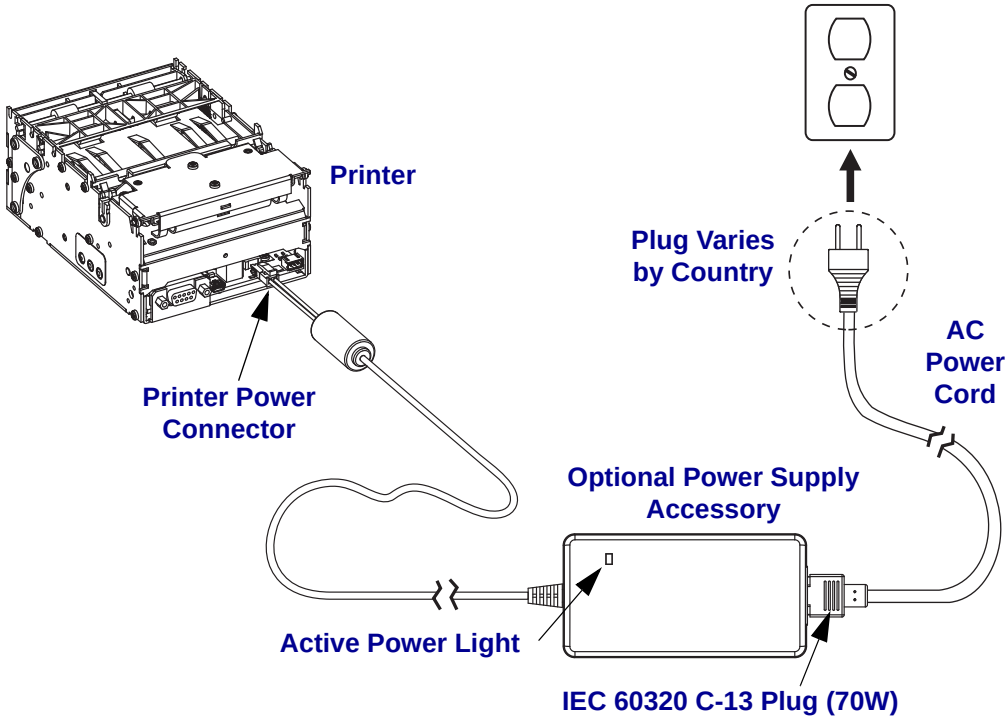


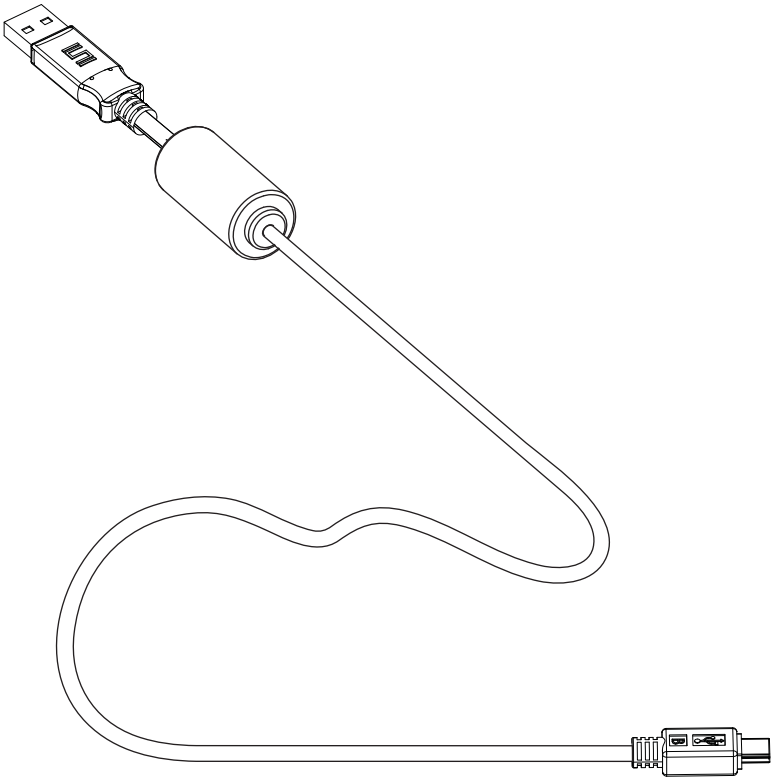
Figure 6-15 • Attaching Power

Note • Ensure the appropriate power cord with a three (3) prong plug and an IEC 60320-C13 connector are used at all times. These power cords must bear the relevant certification mark of the country in which the product is being used.

Universal Serial Bus (USB) Cable – P1027715

The KR403 power USB Cable accessory can easily be incorporated into a kiosk design. The cable easily be attached to the kiosk with tie wraps.

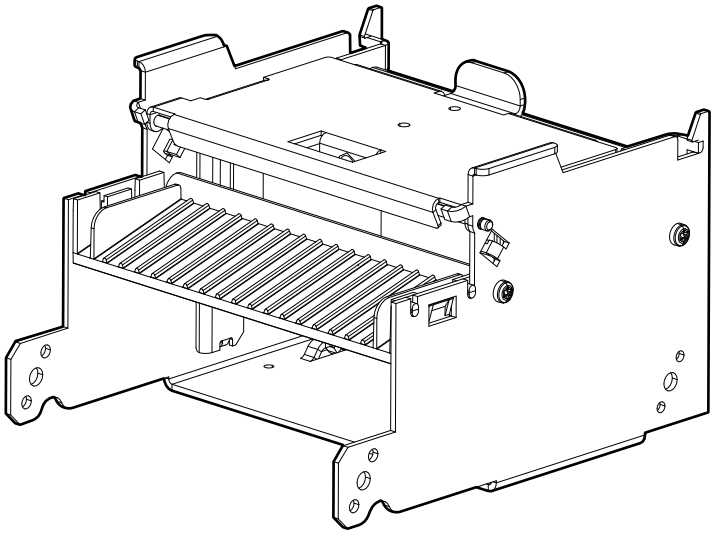
The USB cable has been tested to work with the KR403 printer and complies with all safety and compliance regulations.



Large Media Roll Adapter – P1026858

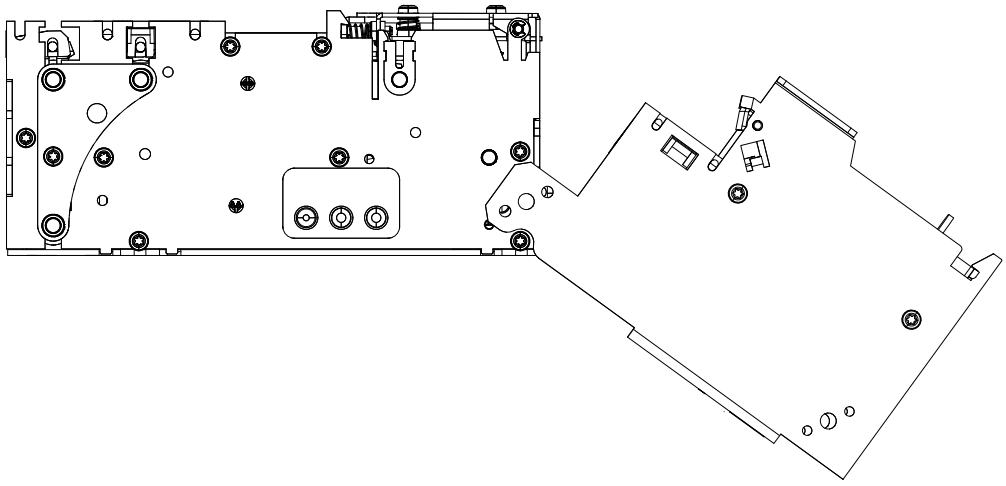
The large media roll adapter is used to prevent excessive pulling force on the printer feed motor when large roll (250mm (10 inch)) media is used. In some cases, when a large media roll is used, the feed motor may stall when slack has built up between the roll and the printer.

Note • Make sure you have installed the correct media guide for the width of media selected before installing the adapter.

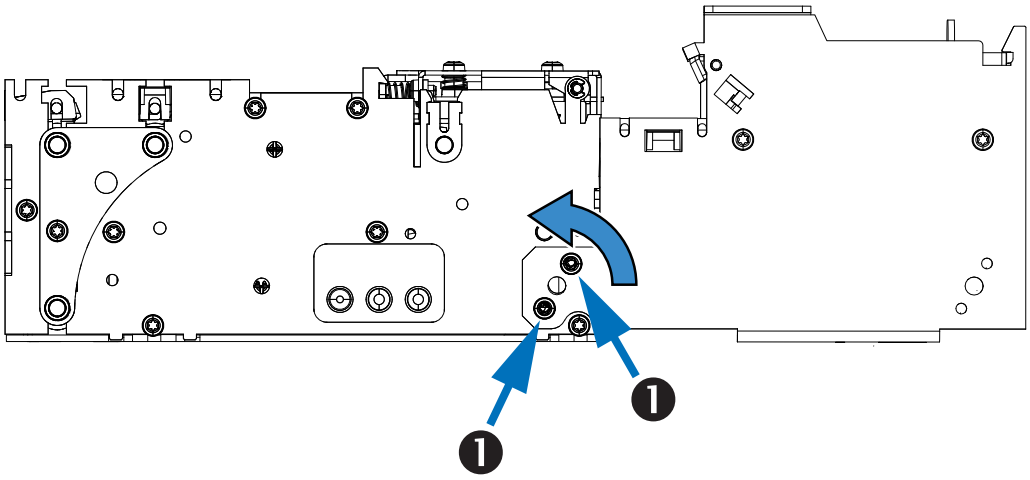


Attaching to the Printer

1. Place the adapter on the printer at an angle as shown.

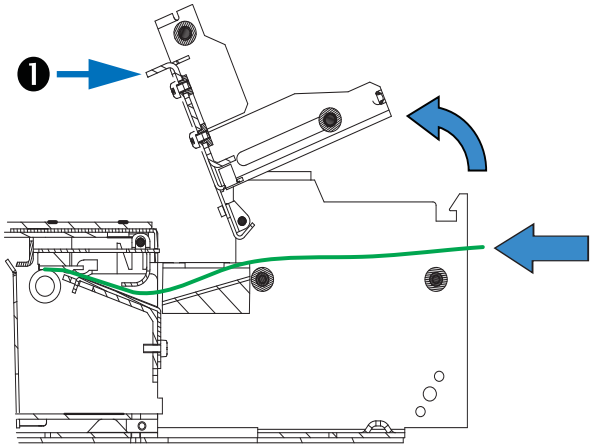


2. Rotate the adapter upwards as shown and install the screws (1).

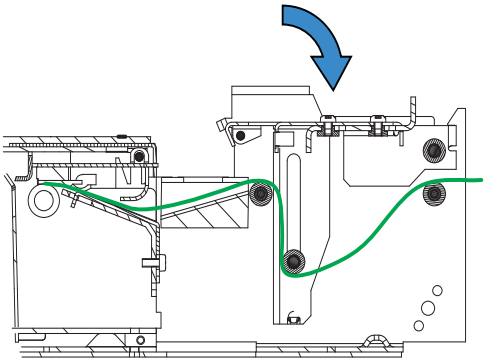


Loading Media

1. Open the adapter tensioner assembly by pushing the locking tab ❶.
2. Insert the media through the adapter and into the printer. For narrow media, the printer will load automatically. For wide media, manual media loading may be required (see "Manual Media Loading" on page 57).



3. Close and lock the adapter tensioner assembly.

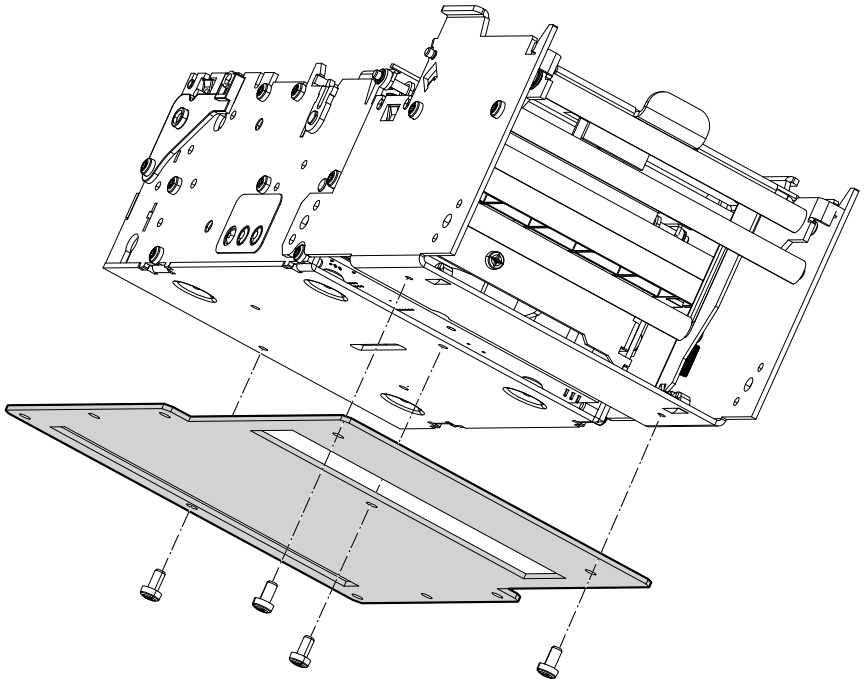


Mounting Plate for Large Media Roll Adapter – P1027728

When the large media roll adapter is used with the printer, the standard mounting plate cannot be used.

Attaching to the Printer

Attach the plate to the printer and the adapter using the screws as shown.



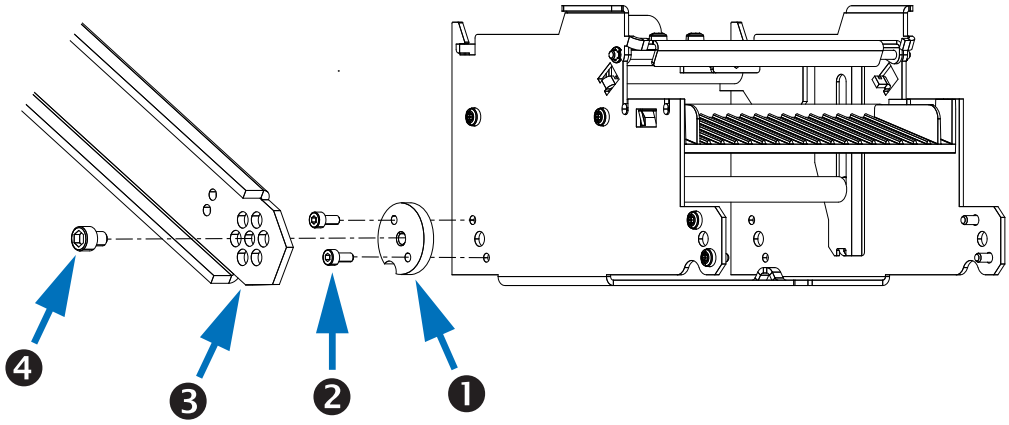
Using other Accessories with the Large Media Roll Adapter

Universal Roll Holder

The universal roll holder (page 71) can be attached to either side of the large media roll adapter. Additionally, the media roll low sensor (page 69) can still be used in this configuration (see "Routing Cables with the Large Media Roll Adapter" on page 85).

1. Attach the mounting block ❶ to the large media roll adapter as shown using the two screws ❷.
2. Attach the universal roll holder ❸ to the mounting block ❶ with the screw ❹.

Note • Printer not shown attached for clarity.



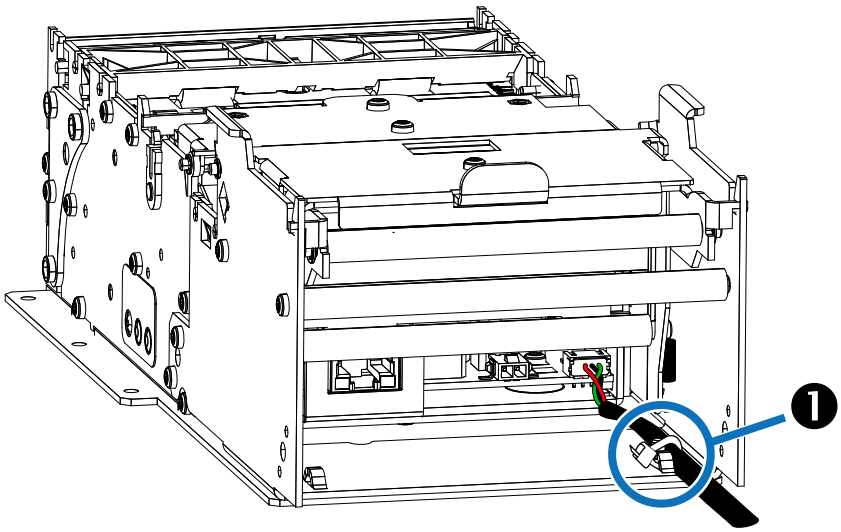
Routing Cables with the Large Media Roll Adapter

Media Roll Low Sensor

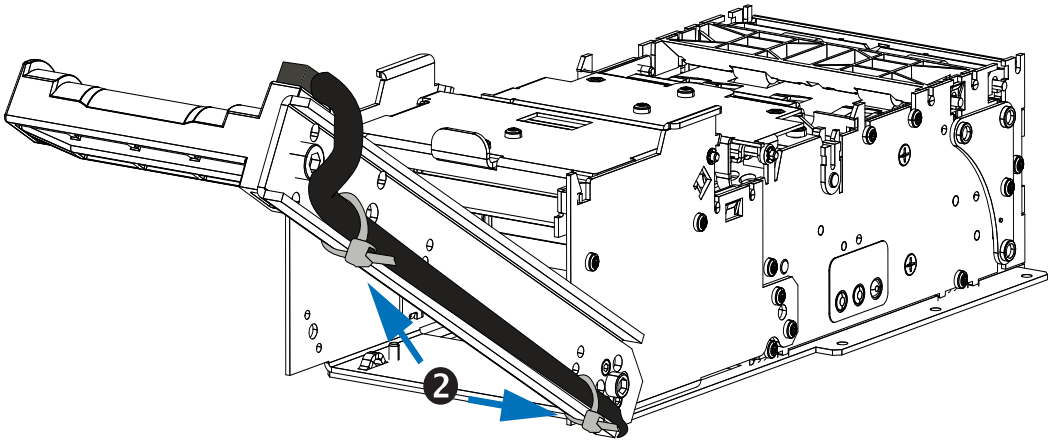
When the universal roll holder is attached to the large medial roll adapter, the 500mm media roll low sensor should be used (see "Media Roll Low Sensor" on page 69).

Left Side Routing

1. Plug the media roll low sensor into the printer.
2. Secure the wiring to the tie-down point on the large media roll adapter using a plastic cable tie ❶.



3. Route the wiring under and to the outside of the universal roll holder and secure it using plastic cable ties ❷.

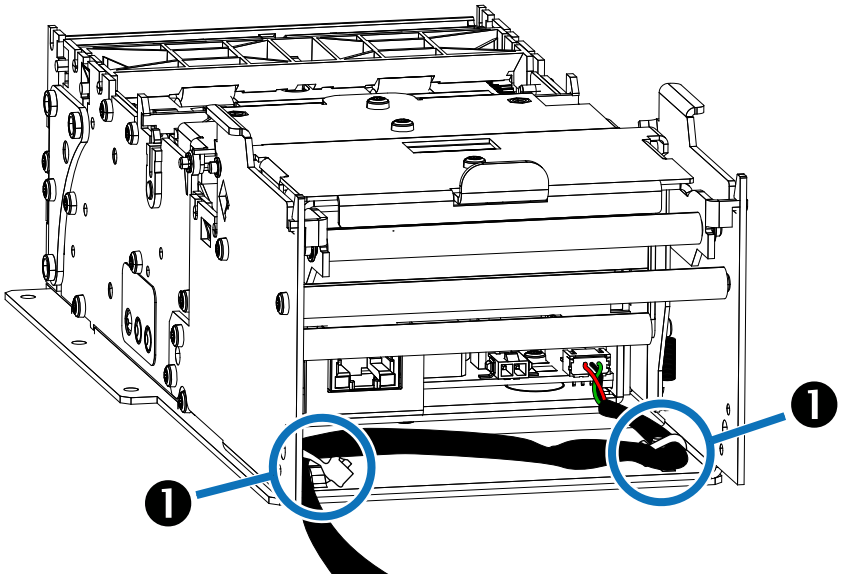


4. Attach the sensor to the roll support using the screw.

Right Side Routing

1. Plug the media roll low sensor into the printer.

2. Secure the wiring to the tie-down points on the large media roll adapter using plastic cable ties ❶ as shown.



3. Route the wiring under and to the outside of the universal roll holder and secure it using plastic cable ties.

4. Attach the sensor to the roll support using the screw.

Power Cable

Because of the ferrite attached to the power cable accessory, it is necessary to route it so that it does not interfere with the function of the large media roll adapter.

When using a power source other than the power supply accessory, routing the wiring is done along the left side of the large media roll adapter using a plastic cable tie at the tie-down point.

Serial, USB, and Ethernet Cables

Data cables are routed along the right side of the large media roll adapter. Secure the cables to the tie-down point on the large media roll adapter using plastic cable ties.

7

Troubleshooting

Status Light Descriptions

Application LED States

Immediately after power is applied to the printer, a brief self test is performed and the status light will report the following conditions:

Table 7-1 • Application LED States

Solid Green	0 - OK	This code is reported when no other codes are active. It indicates the printer is functioning normally.
One Red Flash	1 - Paper Jam in Presenter	This code indicates that media is stuck in the presenter. This error is set when the printer attempts to eject the media but cannot complete the operation. This error is cleared by removing the media from the presenter sensor.
Two Red Flashes	2 - Cutter Jam	This code indicates that the printer could not find the cutter blade or could not properly manage its position. The error is set when the printer attempts to cut but fails after three retries. This error is cleared by cycling the power off and on.

Table 7-1 • Application LED States

Three Red Flashes	3 - Out of Paper	This code indicates that the selected EOP sensor has detected no media present. This value is signaled wither when the mark engine has detected a mark larger than "TOF marker length" plus 5mm, or when the A/D reading of the EOP sensor drops below the “End of paper threshold”. This error is cleared after successful media load (either via calibration of via regular media load).
Four Red Flashes	4 - Print Head Lifted	This code indicates that the print head has been lifted. This error is cleared by returning the print head to its locked position.
Five Red Flashes	5 - Paper Feed Error	This code indicates that the paper failed to reach the presenter sensor within the expected amount of time. The error is signaled if the media does not reach the presenter sensor after feeding the length from the cuter to the sensor plus 15mm. This error is cleared by opening and closing the print head, or by cycling power off and on.
Yellow Flashing	6 - Head Temperature Error	This code indicates that the print head has exceeded the maximum permitted temperature. This status code is set when the print head temperature exceeds 65° C (149° F). When this condition occurs, the printer feeds 100mm (4 inches) of blank media, cuts, and presents. This error is cleared automatically when the print head temperature falls below 55° C (131° F).
Rapid Amber Flashing	Firmware missing or corrupt	This code indicates that the bootware has detected an incorrect or missing checksum in the firmware. This error is cleared when the firmware is reloaded or updated. Refer to the Software Integrator Guide for firmware upload procedure.

Application User Interface

With the printer power on, press and hold the feed button. Continue holding the feed button until the status indicator flash sequence occurs. The next flash sequence occurs after completion of the previous flash sequence. The flash sequences perform the following functions:

Table 7-2 • Application User Interface

Status Flash Sequence	Action
One Flash, then Solid Green	Appears for one second. This will print an internal self-test page.
Two Flash, then Solid Green	Appears for one second. Performs system calibration – must be started with paper out of presenter and from under printhead, and with no error signaled.
Three Flash, then Solid Green	Appears for one second. Performs a simulated USB cable connect and reconnect causing a USB plug-and-play event to occur.
Four Flash, then Solid Green	Appears for one second. Sets all printer settings to the default with the exception of media guide calibration, then it will perform the media guide calibration.
Five Flash, then Solid Green	Appears for one second. Prints a 50% gray pattern, ejects it and then prints a diagonal line pattern and ejects it.
If the feed button remains pressed after the five flash sequence, the status light goes off.	

Printer status is also reported during normal operation when an error occurs, or a status request can be sent to the printer via the Windows driver. Refer to the Software integrator Guide for error codes reported by the Windows driver.

Print Quality Problems

No print on the label.

- The media may not be direct thermal media, or the thermal media coating is not facing upward. "Determining Thermal Media Types" on page 52.
- Is the media loaded correctly? Is the thermal media coating facing upward? "Determining Thermal Media Types" on page 52.
- The printhead may be dirty or damaged.
  - The printhead is dirty. Clean the printhead. Refer to the Service Manual (P1026223) for instructions.
  - The printhead is damaged. Replace the printhead. Refer to the Service Manual (P1026223) for instructions.
- The printhead wiring may be damaged or not connected properly.
  - Check the wiring connections at the printhead and the main logic board. Refer to the Service Manual (P1026223) for instructions.
  - Check for damage to the wiring. Replace the wiring if damaged. Refer to the Service Manual (P1026223) for instructions.

The printed image does not look right.

- The printhead is dirty. Clean the printhead. Refer to the Service Manual (P1026223) for instructions.
- The printhead has worn out. The printhead is a consumable item and will wear out due to friction between the media and printhead. Using unapproved media may shorten life or damage your printhead. Replace the printhead. Refer to the Service Manual (P1026223) for instructions.
- Adjust the print darkness and/or print speed. Refer to the Software Integrator Guide (P1026208) for instructions.
  - The Windows printer driver or application software may change these settings and may require a change to optimize print quality.
- The media being used is incompatible with the printer. Be sure to use the recommended media for your application, and always use Zebra-approved media.
- The platen (driver) roller maybe losing traction due to:
  - Foreign objects attached to its surface.
  - The rubbery smooth surface has become polished and slippery.

- The platen may need cleaning or replacement. Refer to the Service Manual (P1026223) for instructions.

There are long tracks of missing print (blank vertical lines) on several labels.

- The printhead may be dirty or damaged.
  - The printhead is dirty. Clean the printhead. Refer to the Service Manual (P1026223) for instructions.
  - The printhead is damaged. Replace the printhead. Refer to the Service Manual (P1026223) for instructions.
- The printhead has worn out. The printhead is a consumable item and will wear out due to friction between the media and printhead. Using unapproved media may shorten life or damage your printhead. Replace the printhead. Refer to the Service Manual (P1026223) for instructions.

The printing does not start at the top of the receipt or misprinting of one to three receipts.

- The printer needs to be calibrated (refer to the two-flash sequence of Table 7-2 “Application User Interface” on page 89).
- Reload the media. "Automated Media Loading" on page 56 or "Manual Media Loading" on page 57.

Media Sensing Problems

The KR403 printer default media mode is Continuous. The printer will remain in this mode until it is changed by the Windows Driver.

The KR403 printer has automatic media calibration capability for black mark media. Once the printer is printing or feeding media, the printer continually checks and adjusts the media sensing to accommodate for minor changes in media parameters from page to page on a roll, and from roll to roll of media. The printer will automatically initiate a media length calibration if the expected media length or the page to page gap distance has exceeded the acceptable variation range when starting a print job or feeding media.

If the printer does not detect blacklines (or notches with black mark sensing) after feeding the media the default maximum label length distance of 24 inches (610mm), then the printer will report a media error.

Optionally, the printer can be set to do a short media calibration after loading media or when closing the printhead with power on. The printer will then feed up to three labels while calibrating.

The printer will not load the media.

- The media has changed, or a different media guide has been installed.
  - Make sure the appropriate media guide is installed for the media being used. Refer to "Media Guide - Required Accessory" on page 50.
  - Perform the two-flash procedure to recalibrate the printer. Refer to "Application User Interface" on page 89. Reload the media (refer to the Hardware Integrator Guide for media loading procedures).
  - Load the media manually. Refer to "Manual Media Loading" on page 57.
- The platen (driver) roller maybe losing traction due to:
  - Foreign objects attached to its surface.
  - The rubbery smooth surface has become polished and slippery.
- The platen may need cleaning or replacement. Refer to the Service Manual (P1026223) for instructions.
- The media sensor may be dirty or damaged. Refer to the Service Manual (P1026223) for instructions.
- The printhead assembly is not closed.
  - Check the status light on either side of the printer. If the status light is showing four red flashes then the printhead is not closed. Push down on the printhead assembly until it locks into place.
- There is a jam under the printhead. Refer to the Service Manual (P1026223) for instructions.
- The large media roll may be over torquing the feed motor. Install the large media roll adapter. See "Large Media Roll Adapter – P1026858" on page 80.

The printer will not eject the media.

- The presenter rollers are dirty or damaged.
  - The presenter rollers are dirty. Refer to the Service Manual (P1026223) for instructions.
  - The presenter rollers are damaged. Refer to the Service Manual (P1026223) for instructions.
- There is a jam under the presenter. Refer to the Service Manual (P1026223) for instructions.
- The presenter sensor may be dirty or damaged.

  - The presenter sensor is dirty. Refer to the Service Manual (P1026223) for instructions.
  - The presenter sensor may be damaged and need to be replaced. Refer to the Service Manual (P1026223) for instructions.

- The presenter has not cleared the previous receipt.
  - Check the status light on either side of the printer. If the status light is showing one red flash then the printer is reporting media in the presenter. Remove any media that may be in the presenter.
- The presenter motor may need to be replaced. Refer to the Service Manual (P1026223) for instructions.
- The presenter drive gears may be damaged or worn. Refer to the Service Manual (P1026223) for instructions.

Other Problems

The receipts are not cutting properly.

- The cutter blade may be worn. Replace the cutter blades. Refer to the Service Manual (P1026223) for instructions.
- The cutter tensioner may be worn or damaged. Replace the cover plate assembly. Refer to the Service Manual (P1026223) for instructions.
- Check the Cutter Mode setting, and the Partial Cut Width setting in the Windows driver. Refer to the Software Integrator Guide (P1026208).
- The cutter motor may need to be replaced. Refer to the Service Manual (P1026223) for instructions.
- The cutter drive gear, drive pin, or cutter actuator may be damaged or worn. Refer to the Service Manual (P1026223) for instructions.
- Check for the latest firmware and driver version.

There are no lights on the printer.

- Make sure there is power applied to the printer.
- The control panel may be dirty or damaged. Refer to the Service Manual (P1026223) for instructions.
- The main logic board may be damaged. Refer to the Service Manual (P1026223) for instructions.
- Check for the latest firmware and driver version.

A receipt format was sent to, but not recognized by, the printer.

- If the status LED is on or flashing, refer to Table 7-1 “Application LED States” on page 87.
- Make sure the USB cable is correctly installed. Refer to "Connecting the Printer to the Host" on page 36.
- A communications problem has occurred. Perform a USB detect (refer to the three-flash sequence of Table 7-2 “Application User Interface” on page 89).

The receipts are not cutting at the black mark.

- Make sure you are using the appropriate media guide for the desired media width. See "Media Guide - Required Accessory" on page 50.
- Perform a media guide calibration. Refer to the four-flash sequence of "Application User Interface" on page 89.
- Make sure you are using the appropriate media. See "Determining Thermal Media Types" on page 52.
- Use the Windows driver to set the printer to black mark mode. Refer to the Software Integrator Guide (P1026208) for instructions on setting black mark mode.
- Reload the media. Refer to "Automated Media Loading" on page 56.

Resetting the Factory Default Values

- Sometimes, resetting the printer to the factory defaults may solve some problems. Refer to the two-flash sequence of Table 7-2 “Application User Interface” on page 89.
- Use the Windows driver to perform a printer reset. Refer to the Software Integrator Guide (P1026208) for instructions.

Contact Technical Support

Technical Support via the Internet is available 24 hours per day, 365 days per year.

www.zebra.com

For questions on the operation of Zebra equipment and software, please call your distributor. For additional assistance, contact us.

Please have your model and serial numbers available.

For contact information, refer to "Contacts" on page 5.