
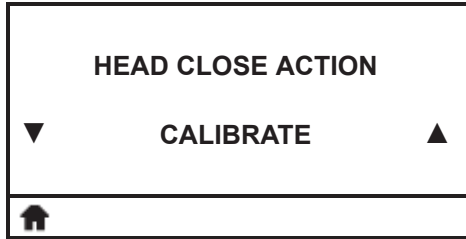


Table 2 • Calibration and Diagnostic Tools (Continued)

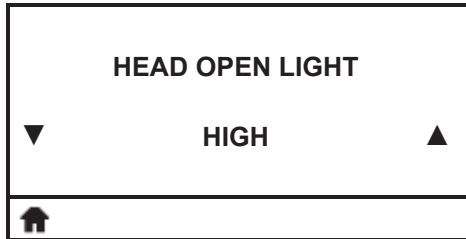
Media and Ribbon Sensor Calibration	Calibrate the printer to adjust the sensitivity of the media and ribbon sensors. For complete instructions on how to perform a calibration procedure, see Calibrate the Ribbon and Media Sensors on page 119.	
	<i>Accepted values:</i>	N/A
	<i>Related ZPL command(s):</i>	~JC
	<i>SGD command used:</i>	ezpl.manual_calibration
	<i>User menu item:</i>	MEDIA/RIBBON CAL on page 98
	<i>Control panel key(s):</i>	Hold PAUSE + CANCEL for 2 seconds to initiate calibration. (corrected wck)
	<i>Printer web page:</i>	<p>The calibration procedure cannot be initiated through the web pages. See the following web page for settings that are set during sensor calibration:</p> <p>View and Modify Printer Settings > Calibration</p> <div>  <p>Important • Do not change these settings unless you are told to do so by Zebra Technical Support or by an authorized service technician.</p> </div>
Communication Diagnostics Mode	Use this diagnostics tool to cause the printer to output the hexadecimal values for all data received by the printer. For more information, see Communication Diagnostics Test on page 166.	
	<i>Accepted values:</i>	<ul style="list-style-type: none"> • DISABLED • ENABLED
	<i>Related ZPL command(s):</i>	~JD to enable, ~JE to disable
	<i>SGD command used:</i>	device.diagnostic_print
	<i>User menu item:</i>	DIAGNOSTIC MODE on page 99
	<i>Control panel key(s):</i>	Hold PAUSE + FEED for 2 seconds when the printer is in the Ready state.
	<i>Printer web page:</i>	N/A



Set the Head-Close Action

Set the action for the printer to take when you close the printhead.

See [Head-Close Action](#) on page 73 for more information.



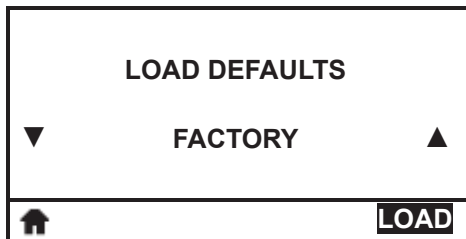
Set the Head-Open Light Action

Set the brightness of the light that turns on when the printhead is open.



Set the Cover Open Light Action

Set the brightness of the light that turns on when the media door is open.

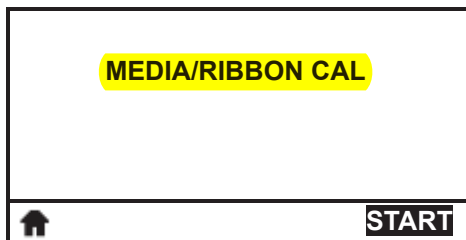


Load Printer Defaults*

Use this menu item to restore all settings other than the network settings back to the factory defaults. Use care when loading defaults because you will need to reload all settings that you changed manually.

See [Load Defaults](#) on page 74 for more information.

* Other options are available by scrolling.



Calibrate the Media and Ribbon Sensors

Use this menu item to adjust the sensitivity of the media and ribbon sensors.

See [Media and Ribbon Sensor Calibration](#) on page 75 for more information. For instructions on how to perform a calibration procedure, see [Calibrate the Ribbon and Media Sensors](#) on page 119.

Calibrate the Ribbon and Media Sensors

Use the procedure in this section to calibrate the printer, which adjusts the sensitivity of the media and ribbon sensors.

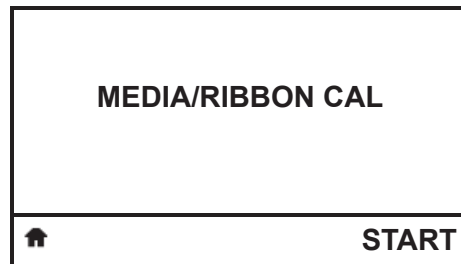
- For issues that may be resolved by sensor calibration, see [Printing Issues on page 148](#).
- For a summary of the options for initiating calibration, see [Media and Ribbon Sensor Calibration on page 75](#).



Important • Follow the calibration procedure exactly as presented. All of the steps must be performed even if only one of the sensors requires adjustment. You may press and hold CANCEL at any step in this procedure to cancel the process.

To perform sensor calibration, complete these steps:

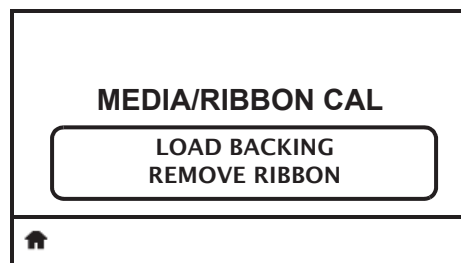
1. With the printer in the Ready state, initiate media and ribbon calibration in one of these ways:
 - Press and hold PAUSE + CANCEL for 2 seconds. (corrected wck)
 - Send the `ezpl.manual_calibration` SGD command to the printer. See the *Zebra Programming Guide* for more information about this command.
 - Navigate to the following menu item on the control panel display. This item is located under the TOOLS menu and the SENSORS menu. See [Navigating through Screens in the Display on page 90](#) for information about using the control panel and accessing the menus.



- a. Press RIGHT SELECT to select START.

The printer does the following:

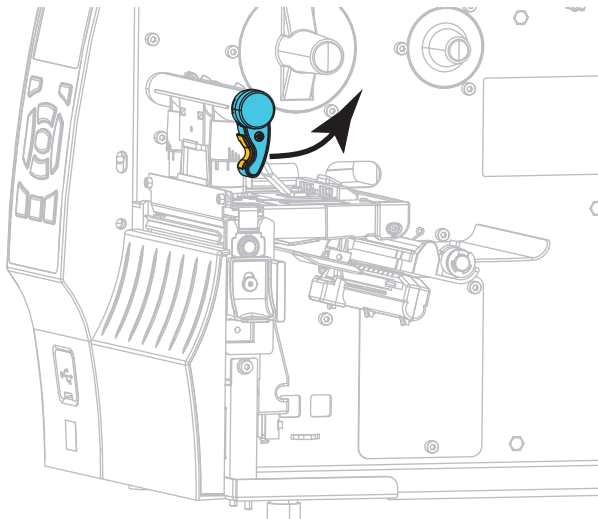
- The **STATUS light** and **SUPPLIES light** flash yellow once.
- The **PAUSE light** blinks yellow.
- The control panel displays:



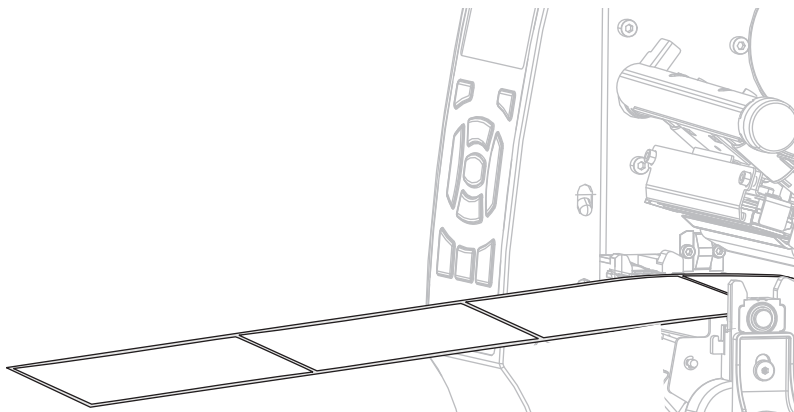


2. **Caution** • The printhead may be hot and could cause severe burns. Allow the printhead to cool.

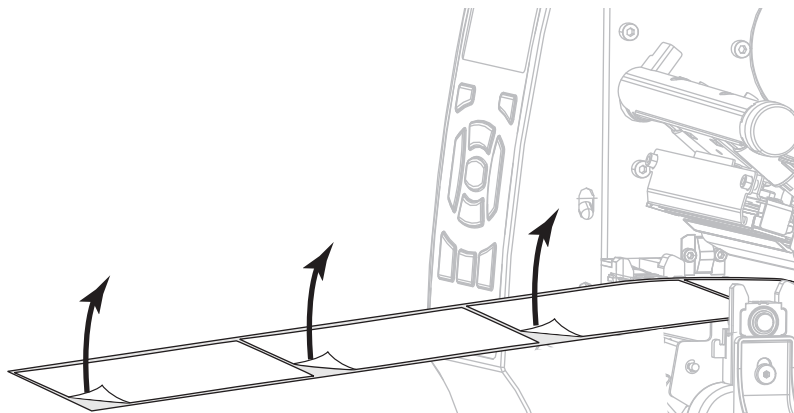
Open the printhead assembly by rotating the printhead-open lever.



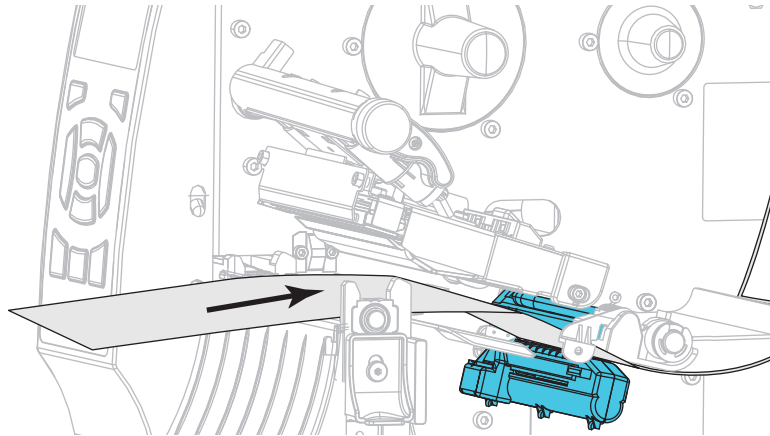
3. Extend the media approximately 8 in. (203 mm) out of the printer.



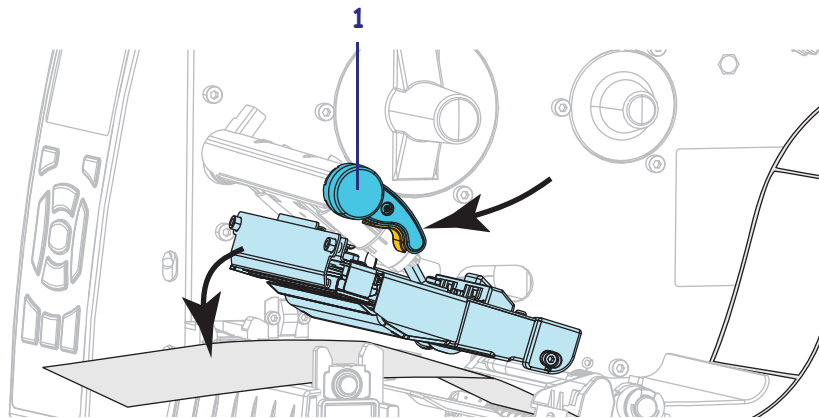
4. Remove the exposed labels so that only the liner remains.



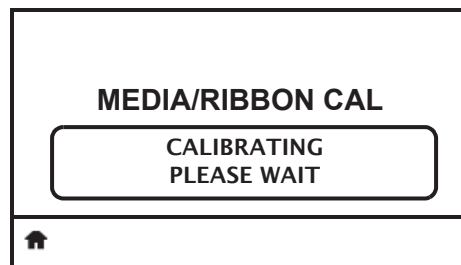
5. Pull the media into the printer so that only the backing is between the media sensors.



6. Remove the ribbon (if used).
7. Rotate the printhead-open lever (1) downward until it locks the printhead in place.

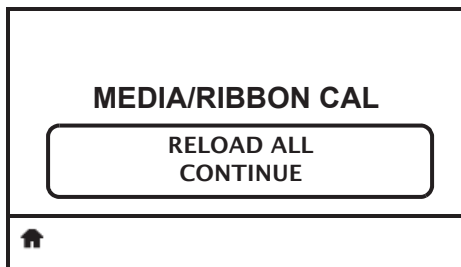


8. Press PAUSE to begin the media calibration process.
- The **PAUSE light** turns off.
 - The **SUPPLIES light** flashes.
 - The control panel displays:

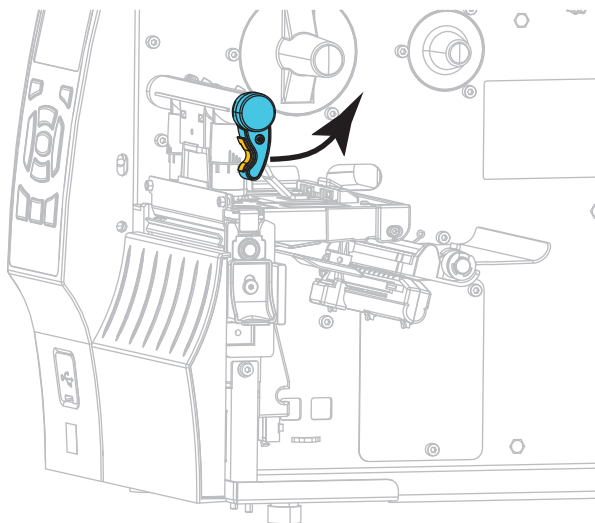


When the process is complete:

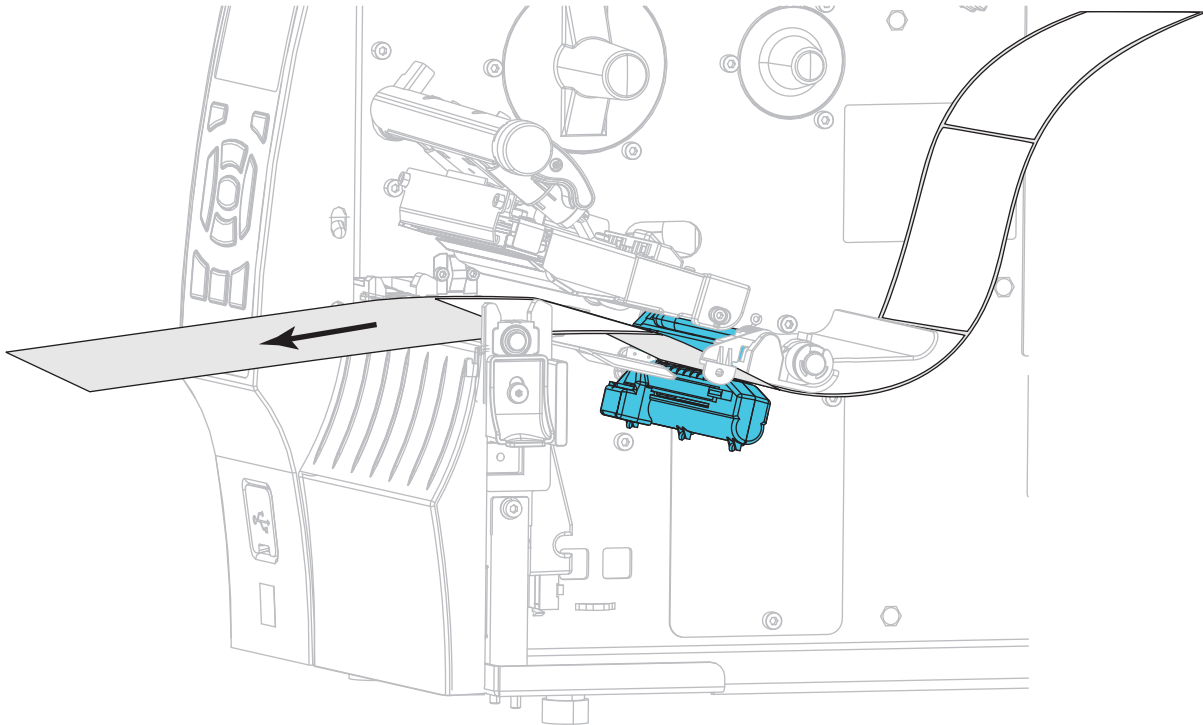
- The **SUPPLIES light** stops flashing.
- The **PAUSE light** flashes yellow.
- The control panel displays:



9. Open the printhead assembly by rotating the printhead-open lever.



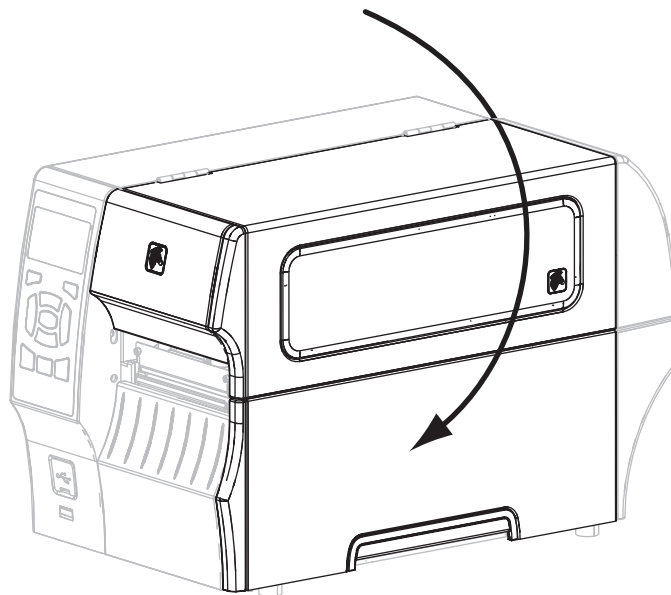
10. Pull the media forward until a label is positioned under the media sensors.



11. Reload the ribbon (if used).

12. Close the printhead.

13. Close the media door.



14. Press PAUSE to enable printing.

Printing Issues

Table 2 identifies possible issues with printing or print quality, the possible causes, and the recommended solutions.

Table 2 • Printing Issues

Issue	Possible Cause	Recommended Solution
General print quality issues	The printer is set at the incorrect print speed.	For optimal print quality, set the print speed to the lowest possible setting for your application via control panel, the driver, or the software. You may want to perform the FEED Self Test on page 162 to determine the optimal settings for your printer. See Print Speed on page 67 for how to change the print speed.
	You are using an incorrect combination of labels and ribbon for your application.	<ol style="list-style-type: none"> 1. Switch to a different type of media or ribbon to try to find a compatible combination. 2. If necessary, consult your authorized Zebra reseller or distributor for information and advice.
	The printer is set at an incorrect darkness level.	For optimal print quality, set the darkness to the lowest possible setting for your application. You may want to perform the FEED Self Test on page 162 to determine the ideal darkness setting. See Print Darkness on page 67 for how to change the darkness setting.
	The printhead is dirty.	Clean the printhead and platen roller. See Clean the Printhead and Platen Roller on page 132 .
	Incorrect or uneven printhead pressure.	Set the printhead pressure to the minimum needed for good print quality. See Adjust the Printhead Pressure on page 124 .
Loss of printing registration on labels. Excessive vertical drift in top-of-form registration.	The platen roller is dirty.	Clean the printhead and platen roller. See Clean the Printhead and Platen Roller on page 132 .
	Media guides are positioned improperly.	Ensure that the media guides are properly positioned. See Load the Media on page 34 .
	The media type is set incorrectly.	Set the printer for the correct media type (gap/notch, continuous, or mark). See Media Type on page 67 .
	The media is loaded incorrectly.	Load media correctly. See Load the Media on page 34 .
Long tracks of missing print on several labels	Print element damaged.	Call a service technician.
	Wrinkled ribbon.	See wrinkled ribbon causes and solutions in Ribbon Problems on page 151 .

Table 2 • Printing Issues (Continued)

Issue	Possible Cause	Recommended Solution
Fine, angular gray lines on blank labels	Wrinkled ribbon.	See wrinkled ribbon causes and solutions in Ribbon Problems on page 151.
Printing too light or too dark over the entire label	The media or ribbon is not designed for high-speed operation.	Replace supplies with those recommended for high-speed operation.
	You are using an incorrect combination of media and ribbon for your application.	<ol style="list-style-type: none"> 1. Switch to a different type of media or ribbon to try to find a compatible combination. 2. If necessary, consult your authorized Zebra reseller or distributor for information and advice.
	You are using ribbon with direct thermal media.	Direct thermal media does not require ribbon. To determine if you are using direct thermal media, perform the label scratch test in When to Use Ribbon on page 18.
	Incorrect or uneven printhead pressure.	Set the printhead pressure to the minimum needed for good print quality. See Adjust the Printhead Pressure on page 124.
Smudge marks on labels	The media or ribbon is not designed for high-speed operation.	Replace supplies with those recommended for high-speed operation.
Misregistration/skips labels	The printer is not calibrated.	Calibrate the printer. See Calibrate the Ribbon and Media Sensors on page 119.
	Improper label format.	Check your label format and correct it as necessary.
Misregistration and misprint of one to three labels	The platen roller is dirty.	Clean the printhead and platen roller. See Clean the Printhead and Platen Roller on page 132.
	Media does not meet specifications.	Use media that meets specifications. See Media Specifications on page 172.
Vertical drift in top-of-form position	The printer is out of calibration.	Calibrate the printer. See Calibrate the Ribbon and Media Sensors on page 119.
	The platen roller is dirty.	Clean the printhead and platen roller. See Clean the Printhead and Platen Roller on page 132.

Table 2 • Printing Issues (Continued)

Issue	Possible Cause	Recommended Solution
Vertical image or label drift	The printer is using non-continuous labels but is configured in continuous mode.	Set the printer for the correct media type (gap/notch, continuous, or mark—see Media Type on page 67) and calibrate the printer, if necessary (see Calibrate the Ribbon and Media Sensors on page 119).
	The media sensor is calibrated improperly.	Calibrate the printer. See Calibrate the Ribbon and Media Sensors on page 119 .
	The platen roller is dirty.	Clean the printhead and platen roller. See Clean the Printhead and Platen Roller on page 132 .
	Improper printhead pressure settings (toggles).	Adjust the printhead pressure to ensure proper functionality. See Adjust the Printhead Pressure on page 124 .
	The media or ribbon is loaded incorrectly.	Ensure that the media and ribbon are loaded correctly. See Load the Ribbon on page 60 and Load the Media on page 34 .
	Incompatible media.	You must use media that meets the printer specifications. Ensure that the interlabel gaps or notches are 2 to 4 mm and consistently placed (see Media Specifications on page 172).
The bar code printed on a label does not scan.	The bar code is not within specifications because the print is too light or too dark.	Perform the FEED Self Test on page 162 . Adjust the darkness or print speed settings as necessary.
	There is not enough blank space around the bar code.	Leave at least 1/8 in. (3.2 mm) between the bar code and other printed areas on the label and between the bar code and the edge of the label.
Auto Calibrate failed.	The media or ribbon is loaded incorrectly.	Ensure that the media and ribbon are loaded correctly. See Load the Ribbon on page 60 and Load the Media on page 34 .
	The sensors could not detect the media or ribbon.	Calibrate the printer. See Calibrate the Ribbon and Media Sensors on page 119 .
	The sensors are dirty or positioned improperly.	Ensure that the sensors are clean and properly positioned.
	The media type is set incorrectly.	Set the printer for the correct media type (gap/notch, continuous, or mark). See Media Type on page 67 .