



The Label Printer Troubleshooting Guide

White Paper



The Basics of Printer Troubleshooting

Modern Thermal Printer technology is more reliable and easier to use than ever. It doesn't mean, however that you won't find yourself having to deal with the occasional glitch or breakdown. Before calling your dealer or outside maintenance provider, take a quick look at the most common issues we've put together here and you might be able to get back up and running faster.

How To Use This Guide:

1. Click on the issue you are experiencing
2. Click on "Return" anywhere on the page to come back to the list of issues
3. Click on "Diagram" anywhere on the page to see an exploded view of a typical printer and its main parts identified

Still stumped? Call your support team.

Use the Shortcuts Below to Help Diagnose and Troubleshoot Your Current Printing Issue:

[Bar Code - Edge Definition](#)

[Bar Code - Bleeding or Smearing](#)

[Bar Code - Spacing](#)

[Bar Code - Contrast](#)

[Bar Code - Grayish](#)

[Bar Code - Random Voids and Gaps](#)

[Bar Code - Repetitive Voids and Gaps](#)

[Bar Code - Streaks and Dead Spots](#)

[Bar Code - Weak or No Image](#)

[Ribbon - Wrinkling](#)

[Ribbon - Breaking](#)

[Ribbon - Slippage](#)

[Ribbon - Sticking to Label](#)

[Ribbon - Removal Difficulties](#)

[Printer - Excessive Noise](#)

[Printer - Doesn't Stop When Out of Ribbon](#)

[Printer - Stalls or Not Printing](#)

[Printhead - Premature Failure](#)

[Label - Not Calibrating/Aligning](#)

Issue: Poor Edge Definition

Possible cause	Corrective action
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Print speed is too high	Reduce print speed; do not rotate symbol
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Ribbon and media are incompatible	Test alternative ribbon or media
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ISSUE: Bar Codes Bleeding (edges are smeared or “feathering”)

Possible cause	Corrective action
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Printhead energy setting is too high	Reduce energy setting until bar edges are clean
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Print speed is too high	Reduce print speed
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Using rotated (“ladder code”) bar code	Change label design to standard “picket fence” style bar codes
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ISSUE: Poor Scan Grade Due to Bar Code Spacing Too Wide or Narrow

Possible cause	Corrective action
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Print speed is too high	Reduce print speed
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Printhead energy setting is too high/ low	Adjust to optimize average bar growth
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Underburn (insufficient ribbon transfer)	Increase printhead energy setting OR use a ribbon with HIGHER sensitivity (requiring less energy)
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Overburn (excessive ribbon transfer)	Reduce printhead energy setting OR use a ribbon with LOWER sensitivity (requiring more energy)
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Bars too thick	Reduce printhead energy setting
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ISSUE: Insufficient Print Contrast Between Bars and Space

Possible cause	Corrective action
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Label surface is too dark	Choose labels with lighter surface color
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Printhead energy setting too low	Increase printhead energy setting
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ISSUE: Bar Codes are Grayish or Translucent

Possible cause	Corrective action
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Printhead energy setting is too high	Reduce energy setting
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Printhead pressure is too high	Reduce printhead pressure
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Ribbon and media are incompatible	Test alternative ribbon and media combination
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ISSUE: Irregular Voids and Gaps in Printed Image

Possible cause	Corrective action
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Ribbon or media are incompatible	Test alternative ribbon or media
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Printhead misalignment	Re-align if necessary. If still misaligned check for defects using known wellperforming ribbon/media combination
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Printhead elements are dirty or obstructed	Clean printhead with pre-saturated cleaning card or Q-tip and Isopropyl alcohol
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Printhead elements are burned out	Replace printhead
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Label surface is inconsistent (including color flood coating)	Choose face sheet or flood coating inks specifically designed for thermal transfer
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Dust on Label	Removed dust with compressed air or place static tinsel across label unwind
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ISSUE: Repetitive Gaps and Voids in Printed Image

Possible cause	Corrective action
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Printhead elements are dirty or obstructed	Clean printhead with pre-saturated cleaning card or Q-tip and Isopropyl alcohol
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Printhead elements are burned out or worn	Replace printhead
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ISSUE: Excessive Noise While Printing

Possible cause	Corrective action
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Printhead energy setting is too high	Reduce energy setting
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"Strip Plate" on printer needs adjustment	Lower strip plate
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ISSUE: Die-Cut Labels Feed Without "Calibrating"

Possible cause	Corrective action
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Label sensor is dirty or obstructed	Clean sensor with compressed air or Q-tip and Isopropyl alcohol
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Label sensor not aligned properly with gap between die-cut labels	Re-align label sensor
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Printer is set in "continuous" mode	Change setting to "label" mode in label software
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Die-cut length is less than recommended minimum for your printer model	Change to a "two-up" format
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ISSUE: Printer Doesn't Stop When Out of Ribbon

Possible cause	Corrective action
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Ribbon sensor is dirty or obstructed	Clean sensor with compressed air or Q-tip and Isopropyl alcohol
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Ribbon sensor is out of position	Align sensor properly
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Ribbon "trailer" is incorrect for specific printer model	Contact your ribbon supplier to confirm that the correct trailer was attached
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ISSUE: Printer Stalls or Will Not Print

Possible cause

Corrective action

Ribbon or media is not loaded properly

Reload ribbon and media, making sure both pass under respective sensors

Ribbon ink density is too light to be “seen” by ribbon sensor

Consult printer manual, manufacturer or VAR for instructions on calibrating sensor

Ribbon or media sensors are dirty or obstructed

Clean sensors with compressed air or Q-tip and Isopropyl alcohol

Label liner too opaque to be “seen” by label gap sensor

Consult printer manual, manufacturer or VAR for instructions on recalibrating sensor, or ask about liner alternatives

Printer is in “label” mode and you are running “continuous” media

Change media type to “continuous” on printer or in label software

ISSUE: Trouble Removing Ribbon From Take-up Shaft

Possible cause

Corrective action

Rewind tension is too high

Reduce rewind tension and/or use empty cores on rewind shaft as take-up cores

ISSUE: Premature Printhead Failure

Possible cause

Corrective action

Excessive thermal stress

Set printhead energy as LOW as possible while still printing an acceptable image

Printhead pressure is too high

Choose thinner gauge media or reduce printhead pressure

Rewind tension is too high

Reduce Rewind Tension

Label surface is uneven (i.e. containing a hologram or raised area)

The edges of raised surfaces on labels will abrade the printhead more quickly than the rest of the surface

Ribbon width is not covering label width

Ensure ribbon width is equal to or wider than media width

Insufficient printhead maintenance

Printheads must be cleaned after every ribbon or media roll change. Clean printhead with pre-saturated cleaning card or Q-tip and Isopropyl alcohol. Using a damp cotton cloth, wipe down the inside of the printer including parts along the media feed path to eliminate plastic label liner dust which is drawn to the printhead while running and can fuse to the surface of the printhead resulting in burn out.

ISSUE: Ribbon Breaking

Possible cause

Corrective action

Printhead elements are dirty or obstructed

Clean printhead with pre-saturated cleaning card or Q-tip and Isopropyl alcohol

Obstruction in ribbon feed path

Check for and remove label, tag or other particles from feed path and printhead assembly

Printhead energy setting is too high

Reduce printhead energy setting

Printhead pressure is too high

Reduce printhead pressure

Printer set on "direct thermal mode"

Set printer to "thermal transfer mode"

Unwind tension is too high

Reduce unwind tension

Backcoat – absent or insufficient

Replace ribbon and contact your ribbon supplier

ISSUE: Ribbon Slippage: Not Advancing At Same Rate as Ribbon

Possible cause

Corrective action

Unwind tension is too low

Increase rewind tension

Ribbon is sticking to printhead

Clean printhead with pre-saturated cleaning card or Q-tip and Isopropyl alcohol

Label surface is too slick for ribbon

Test different ribbon grades or change to a matte-coated label stock in place of gloss

Unwind tension is too high

Reduce unwind tension

ISSUE: Excessive Sticking Between Ribbon and Label

Possible cause

Corrective action

Printhead energy setting is too high

Reduce printhead energy setting

Printhead pressure is too high

Reduce printhead pressure

Unwind tension is too high

Reduce unwind tension

ISSUE: Streaks or “Dead Spots” in Printed Image

Possible cause	Corrective action
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Ribbon is wrinkled	See “Ribbon Wrinkling”
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Poor coating quality on tag or label surface	Contact media supplier for assistance
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Printhead elements or “dots” are dirty	Clean printhead with pre-saturated cleaning card or Q-tip and Isopropyl alcohol
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ISSUE: Not Printing Any Image (or barely any image)

Possible cause	Corrective action
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Ribbon is loaded backwards	Use tape to determine “ink side” of ribbon (ink will come off on tape). Make sure ink side of ribbon is facing media surface as it feeds through printer
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Ribbon and media are incompatible	Test alternative ribbon or media
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ISSUE: Ribbon Wrinkling

Possible cause	Corrective action
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Printhead is misaligned	Re-align printhead
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Guide-bar is misaligned	Re-align guide bar
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Printhead energy is set too high	Reduce printhead energy setting
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Rewind tension is greater than unwind tension	Adjust tension (unwind should be greater than rewind)
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Ribbon is feeding unevenly	Remove supply roll and used ribbon from take-up shaft; reload ribbon making sure film is feeding straight t rewind shaft, not pulling in one direction
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Label liner is migrating out of feed path	Ensure label roll is flush against printer on label roll bar and guide bar is up and beyond outside edge of label liner
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Ribbon rewind shaft is out of alignment	Service required to realign or replace rewind shaft
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Printhead pressure is too high	Reduce printhead pressure
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Ribbon is too narrow or too wide for media	Make sure ribbon is equal to or slightly greater than media width
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Glossary of Useful Terms

Ribbon – is what is used in a thermal printer to apply ink to the label or other media. Ribbons with either “wax” or “resin” inks, which are heated as they pass the printhead, essentially “melting” the ink onto the label. Ribbons generally come on rolls, but some printers now allow for use of cartridges that make their replacement much easier.

Media - is a generic industry term for labels and other forms that are used in the printer to carry barcodes, shipping addresses, etc. It applies to ALL materials that can be printed on.

Print Head – is the part of the printer which does the work of heating the ribbon and transferring the ink to the label in the form of the letters, images or bar codes being sent from the data.

Bar Code - A specific pattern made of lines (or bars) and spaces, of varying width, which represent alpha or numeric data in machine-readable form. Bar codes can be “static” (the same on every label) or “variable” (changes either consecutively or based on programming).

Edges – 1) refers to the edge of the printed bar code itself, usually in reference to a difference in print quality with the center part of the printed area. 2) the edge of the label, which is subject to issues like “edge lift” where the adhesive may not be strong enough to keep the label fixed to then substrate, a common issue on rounded or curved objects.

Overburn – refers to excessive transfer from the ribbon to the label resulting from the printhead energy setting being too high OR from a ribbon that is too sensitive for the job it is performing.

Underburn - refers to insufficient transfer from the ribbon to the label resulting from the printhead energy setting being too high OR from a ribbon that is too sensitive for the job it is performing.

Sensitivity – refers to the ribbon and its requirements for the printhead energy settings. A more sensitive ribbon requires lower energy settings, a less sensitive ribbon requires higher energy settings to print at the desired quality.

Scan Grade – Bar code print quality is graded from “A” to “D” and refers to the ability for the bar code to be scanned successfully on the first try AND to the ability to be scanned multiple times over time. Not every application requires an “A”, so the verification process that defines the “Scan Grade” sets minimum standards for what each grade must represent.

Bar Code Spacing – Refers to the spacing between the black lines in a bar code.

Bleeding – occurs when the edges of the printed lines in a bar code are smeared or “feathering”, which adversely impacts the Scan Grade and could hamper readability.

Alignment/Misalignment – Generally refers to the positioning of the printhead. A slight misalignment can create gaps in the printing or other errors.

Calibration - Printer calibration is the process of making the printed image match the image shown on a computer display. Only those people printing large photographs or detailed graphics probably need to regularly use manual calibration, as others can make use of a printer’s automatic calibration.

Label Sensor - One of many sensors in your printer, this one indicates the presence of the label feeding through the printer.

Continuous Mode - A setting on the printer to support continuous feed labels or forms.

Label Mode - Another setting on the printer that limits the printer to printing single, individual labels one at a time.

Die-cut Label - Die cut refers to a label or tag that will have rounded corners as opposed to square corners (which are often called “butt” or “kiss” cut). In most cases, this makes the label easier to removed from the backing and apply, often with less peeling at the corners too.

Two-up Mode/Single Mode - Refers to label stock that has one label per “row” or two. In Two-up mode, the printer can print two adjacent labels at the same time, which is useful for when quantity and speed are important.

Ribbon Sensor - One of many sensors in your printer, this one indicates the presence of the ribbon, it’s correct alignment and movement and its need for replacement.

Ribbon Trailer - Also known as “Ribbon Carrier” is the piece attached to the end of the ribbon used to attach a new ribbon to the uptake spool, usually with a piece of adhesive on the end.

Ribbon Ink Density - A reference to the thickness of the ink on the ribbon which is relevant in terms of the heat settings for your printheads. Higher density ribbons will require higher energy settings on printheads.

Label Liner - also known as the “release liner” is the paper or vinyl backing used to support the labels until they are printed and removed for use.

Rewind Tension - This is a setting used for ensuring the paper backing of the label is rewound correctly on the Rewind Shaft. Too little or too much tension could leave slack or stress and create printing errors on the labels

Rewind Shaft - The shaft inside the printer where the backing paper of the labels is rewound once the label has been printed and dispensed from the printer.

Take-up Core - Is the empty roll that can be used to “take-up” the used ribbon once it passes through the print head.

Take-up Shaft - is the part of the printer where the Take-up Core is affixed.

Thermal Stress - is caused by a printhead with energy settings set too high, resulting in poor images, bleeding, overburn and other common problems with label printing.

Printhead Pressure - Refers to the amount of pressure the printhead will apply in addition to the heat used to transfer ink/resin from the ribbon.

Printhead Elements - These are the actual “hot” areas of the printhead, derived from same meaning as “heating element”

Unwind Tension - Is the tension used to restrict the speed of the ribbon being pulled from the unwind reel.

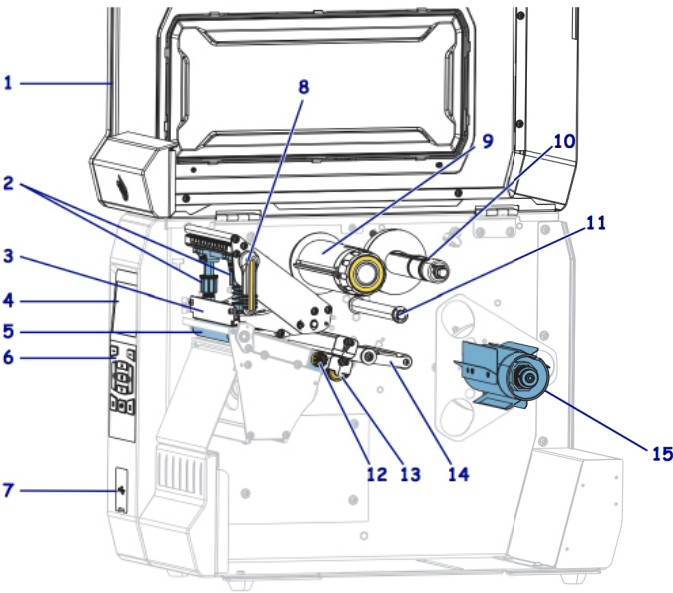
Backcoat - is a substance applied to the non-printing side of the substrate usually to smooth the passage of the label through the printhead while also protecting the printhead from the usually harsher surface of the substrate.

Ribbon Slippage - refers to when the ribbon is not advancing at the same rate as the label. This usually results in poor print quality with gaps as part of the ribbon may be used twice on two different labels.

Supply roll - Is the roll from where the new ribbon is pulled through the printhead.

Diagram of Typical Parts and Location for Thermal Printer:

Refer to the diagram below to help locate the parts being referenced in the Troubleshooting Guide:



1	Media door
2	Printhead pressure toggles
3	Printhead assembly
4	Control panel display
5	Platen roller
6	Control panel
7	USB host port
8	Printhead-open lever
9	Ribbon take-up spindle
10	Ribbon supply spindle
11	Ribbon guide roller
12	Media guide adjustment knob
13	Transmissive media sensor adjustment wheel
14	Media dancer assembly
15	Media supply spindle

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