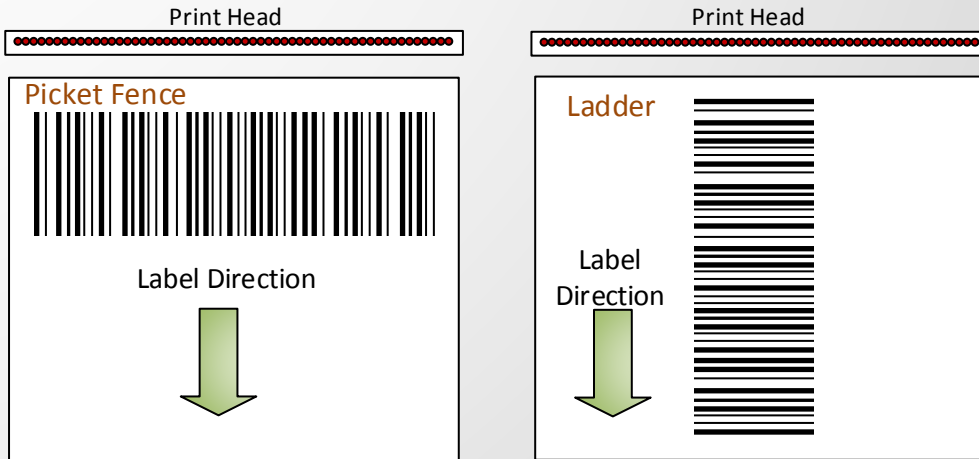# Recommended Orientation for Printing Barcodes

There are two orientations for printing thermal barcodes. You can choose either a Picket Fence orientation or Ladder orientation. There are advantages and disadvantages of each so we will look at both styles.

First – a quick print lesson: The print head works by heating up hundreds of tiny heaters along its edge: typically 200 – 300 per inch. When these tiny heaters are turned on it creates a reaction causing that portion of the white label to darken.
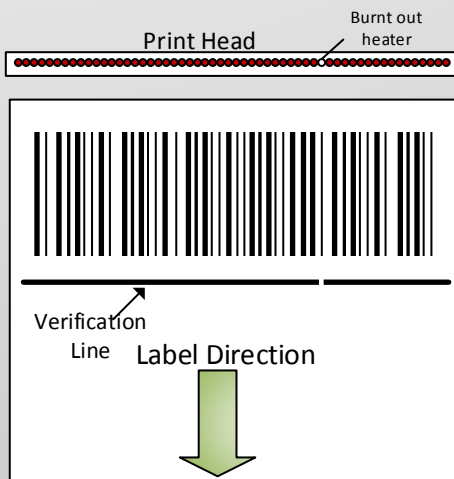
Two Types of Barcode Orientation

The people on the "Picket" side of the fence will argue they get a higher quality barcode because the edges of the bars are crisper due to a print head staying on for an extended period of time. Each line in the barcode requires the heaters to turn on and off once.
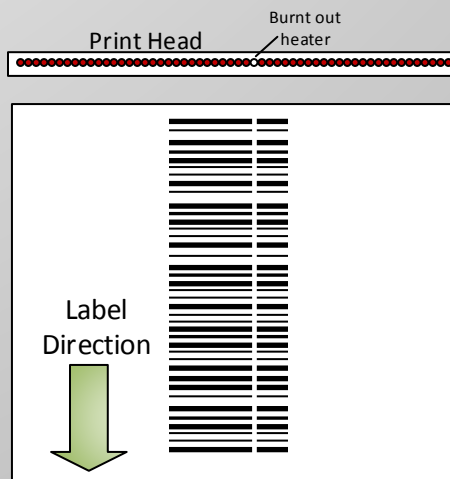
However, if you do get a heater burning out, it can result in a line that is not printed resulting in an unscannable barcode. If you look at the Picket Fence barcode above, a missing line may not be humanly discernible.

If you decide to print the picket fence style, you should print a verification line before, or after, the barcode. This will allow your operator to more easily see if a heater has a burnt out segment before it creates a lot of costly rework. Below is an example of how you can setup the Verification Line in your software with the picket fence orientation

It should be noted that even with this verification line, any missing segment will be small and may be somewhat difficult to see.

If you go with a Ladder orientation, you can see that a bad print head is easily identifiable since it creates a white space across the entire barcode. See image below.

This barcode is still scannable so printing labels can continue. The ladder orientation provides some time for the line operators to eventually change out the print head.

The downside of this method is that the **heaters can burn out faster** when printing at high speeds. This is due to the heaters turning on and off many times per barcode.

VBS recommends picket fence style of printing as the only viable option for industrial environment that demands anything above mediocre printing speeds for the industrial environment. When you print the ladder style, the print quality wills suffer with speed resulting in unscannable or poor performing barcodes. The hassle of unscannable barcodes outweighs the slight increase in cost of replacing print heads.

Taking these tips into account when designing your barcode labeling application can save you considerable amounts of frustration and cost!

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