How-to

Fact vs. Fiction: The Truth About Balancing

Brought To You by Haimer USA | Sep 11, 2019

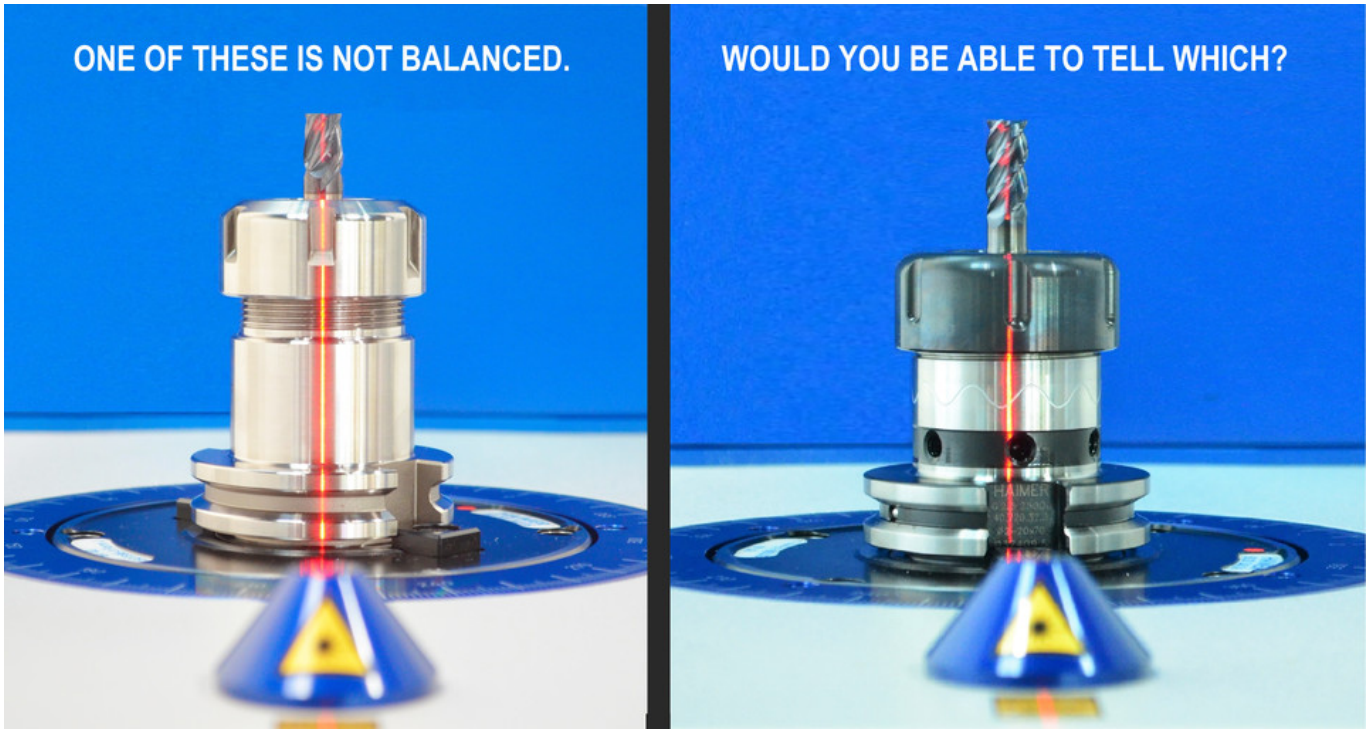
If you're lucky, the veterans in your shop will take a rookie aside and pass on their hard-won knowledge of good machining practices. Fantastic! Most of this information is priceless. But some of it…not so much. For example, there are a lot of myths about balancing out there that, if not refuted, can cost your operation a lot of lost time and money. In this article, Haimer will address these misperceptions and offer a more factual view of best practices for balancing toolholder assemblies.

Myth # 1: Balance Does Not Matter (Much)

Actually, balancing has become an industry standard best practice because it does matter. Look at some examples. Cutting tool manufacturers balance wheel packs prior to grinding. Toolholder manufacturers pre-balance the holder after production. Most machine tool builders insist on balanced assemblies (ISO1940-1: G2.5 at maximum RPM) to maintain warranties on their spindles. Leading aerospace/aircraft and automotive manufacturers in the US inspect the balance of every tool assembly prior to beginning production. These are industry leaders who definitely think balance matters. If you'd like to follow their example, Haimer can help.

For more basic needs:

1. ***Tool Dynamic TD 1002 Balancing Machine***: This machine is your start into the Tool Dynamic series. It is the ideal option for mold makers, small batch lots, single applications and standard chucks. It is the ideal in-house solution for balancing short toolholders and tools on one plane.
2. ***Tool Dynamic TD Economic***: For when you need to balance on one plane, but need something a little more in depth. This machine is also perfect for balancing short toolholders, but offers a base made of polymer concrete to achieve the highest measuring accuracy.



Myth # 2: Balance Is Only Necessary at High Speeds

Though the consequences of imbalance are more evident at higher speeds, the reality is that balance matters at any speed. Even though we may not hear or see evidence of imbalance, it will still be there. It could take the form of wear on spindle bearings, faster deterioration of cutting tools or unexplained failures during machining. Imbalance always has negative consequences. If you balance your car tires for better wear and performance, why wouldn't you do the same with your toolholder assemblies?

For more in-depth jobs:

1. ***Tool TD Economic Plus:*** This is the machine for you if the work calls for balancing in two planes. It offers laser marking, optical indexing help, and automatic indexing of the spindle to make balancing quick and error free at any speed.

Myth # 3: Pre-Balanced Holders Are "Good Enough"

The fact is that most toolholders that are "pre-balanced" are done so naked. This means they are balanced without any mating components. Components such as retention knobs, collet nuts, collets, bearing cages, hydraulic fluid and cutting tools are oftentimes ignored as non-impactful "variables." Yet, these elements often have a ***profound effect on balance***. So depending on the holder type and taper, the balance you think you are getting versus the balance you are actually getting are most likely two very different things!

If you think you don't have time to balance in-house:

1. *Tool Dynamic TD Comfort:* With this machine you can balance frequently with the shortest possible balancing time. It comes equipped with a PC, keyboard, mouse and monitor. This allows you a fast input of tool data along with the comfort of an easy to use interface. You can also correct the unbalance with the help of a milling program making the process even more efficient.

Myth # 4: Good Runout Accuracy = Good Balance

In practice, runout and balance are two different things. While imbalance can create runout during machining (where none was measurable statically), improving upon runout accuracy has zero impact on the balance of the toolholder assembly. To optimize your machining process, you need both runout accuracy and balance.

If you'd like to balance in-house, but aren't sure if you're knowledgeable enough:

1. *Tool Dynamic TD Comfort Plus*: All the same perks of the TD Comfort while adding the ability to balance on two planes. This machine makes balancing fast and easy while never allowing you to make a wrong move during the balancing process. You will be able to get a perfectly balanced tool without being an expert!
2. *Tool Dynamic TD Automatic Balancing Machine*: One of Haimer's most advanced machines, it is a universal CNC-based balancing machine that automates the correction of imbalances. It will automatically compensate the unbalance on either one or two planes by drilling or milling. It can work vertically and horizontally. Plus, it's controlled by a touchscreen that can be accessed simultaneously with the balancing software. This machine will be your new in-house expert so you don't have to be.

Myth # 5: Dressing a Grinding Wheel Is the Same as Balancing It

Unbalance in a grinding wheel pack can stem from a variety of reasons. While dressing cleans and renews a grinding wheel, bringing it back to its original shape, it does nothing to correct weight imbalance. A perfectly round wheel does not equal a perfectly balanced wheel (this is why your car tires still need to be balanced).

Balancing grinding wheels doesn't have to be difficult:

1. *Tool Dynamic TD 800:* This machine allows you to balance large rotors of all kinds whether it be grinding wheels, bearing rings, or turbine wheels. Hand clamping tailored for you allows you to balance rotors easily and efficiently. The hood is even segmented and opens to the side, making even the heaviest part accessible.

Myth # 6: Balance In-House Is Too Expensive

Investing in the proper balancing tools might seem too expensive at first glance, but without the savings that having properly balanced tools provides it might actually be costing you more not to balance. Most shops that perform balancing in-house see ROI on their investment in 18 months or less.

Previously Featured on Haimer USA's blog.

Browse Haimer's line of premium tooling technology for the metalworking industry on MSCDirect.com.

