

How-to

Imbalance — The Spindle Killer

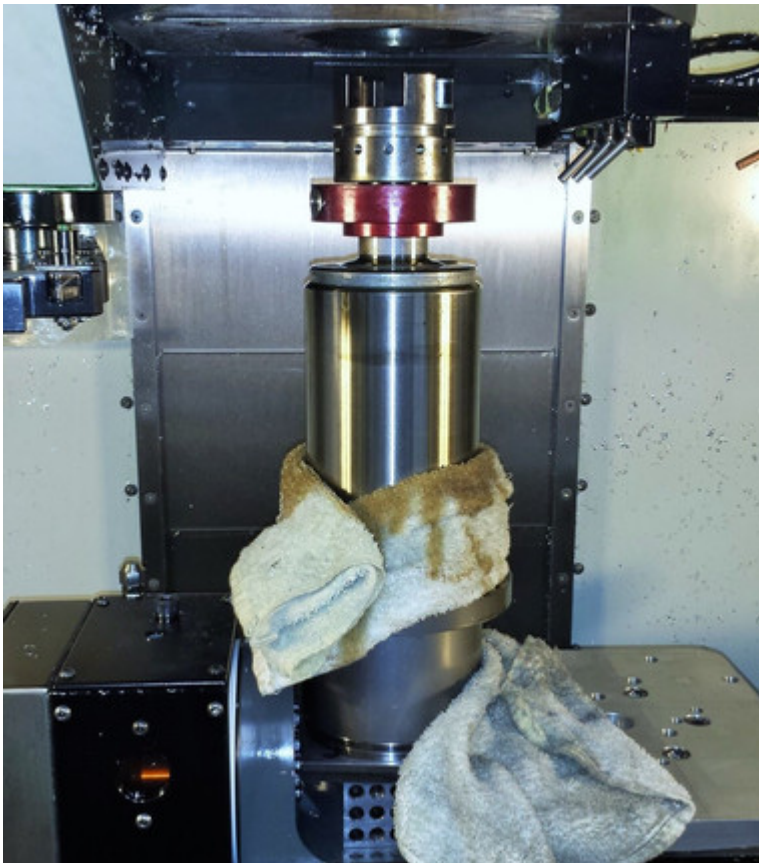
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One of HAIMER's favorite (and best) pieces of advice for customers is that balanced tool assemblies save time, reduce costs and increase tool life. They admit they say it a lot, but that's only because they don't want shops to learn the lesson the hard (and expensive) way. But you don't have to take their word for it. Andy Joerg, owner of Custom Precision in Schaumburg, Illinois, relates why he brought balancing equipment into his shop.

A Bad Day at the Shop

Custom Precision manufactures components for the printing industry, medical device field, aerospace and automotive industries, and more. In 2015, they were roughing out an aluminum block with a 2-year-old spindle fitted with a high-end, "balanced," 20,000 RPM Weldon flat holder, a 20-30,000 RPM indexable tool and a high-quality pull stud. "To be honest, I thought I was good because I was buying "balanced" toolholders that were rated for those speeds," Andy said.

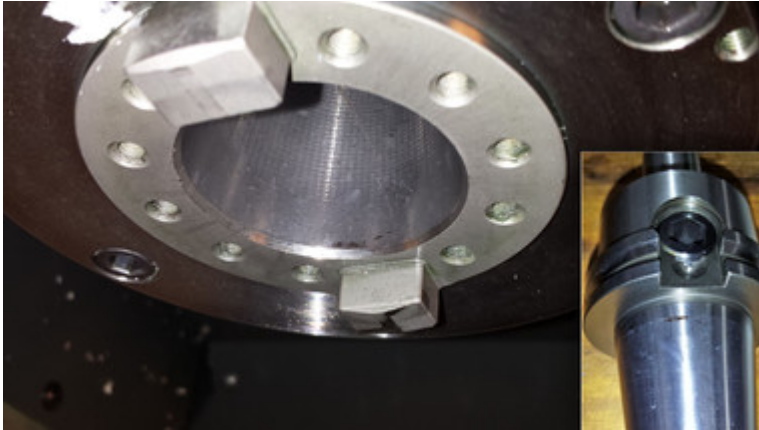
The machine was operating at 12,000 RPM with a feed rate of 225 IPM. After five or six hours running time, the operator noticed a change in the harmonics. Soon, oil started leaking out of the lower spindle gage followed by total spindle blowout. The total cost of the failure, including replacement of the unit and loss of production time (factoring in ten hour shifts for two days), totaled over \$8,000 (still relatively low compared to other systems which could be upwards of \$70,000 to replace).



Blown spindle

A Lucky Meeting

The cause of the failure remained a mystery until a year later when Andy attended the Method Machinery open house in Boston. By chance he met up with HAIMER Sales Representative Mike O'Connor. After talking for a while, the subject of the spindle blowout came up. By this time Andy had a suspicion that balance was part of the problem. Mike immediately recognized a classic unbalance situation and confirmed that balance may indeed have been the cause of the spindle failure. After hearing the additional benefits of balance, Andy was convinced and ordered a **TD 1002** balance machine. Having a better understanding of balance also allowed Andy to see the value of HAIMER **Shrink Fit CAT 40 toolholders** and **pull studs**, which provide an extremely rigid interface and inherently superior balance properties. This led him to additionally purchase a **Power Clamp Comfort** shrink fit system on the spot.



Vibration scraped interior of spindle and caused wear on the taper of the holder.

Numbers Tell the Tale

Back in Illinois, Andy was put in contact with Adam Soto and Rob Salley of HAIMER's Technical Department. They put one of Andy's tool assemblies on the balance machine in HAIMER's showroom. It balanced at G56 at 20,000 RPM. It should have been G2.5. Without correction, the assembly was not certified to run any faster than 900 RPM.

Full Speed Ahead

After Adam and Rob helped Andy set up his new balancing machine in his shop, the operator immediately noticed how much quieter the machine tool sounded when it ran. "Without knowing the cause of the failure, we were more than a little concerned it would happen again," Andy said. "Knowing the fully assembled holder is balanced, combined with the security of shrink fit toolholders, has allowed us to run at full speed with complete confidence. It's one variable we don't have to worry about anymore." As a bonus, Andy also noticed an improvement in tool life and surface finish, and the machine is still running perfectly today.

Passing Value to End Users

Custom Precision has a reputation of providing quality parts to its customers. The combination of HAIMER balancing and shrink fit products has allowed Andy to give them this high level of service more profitably.

Previously featured on Haimer-USA.com.

To learn more about how HAIMER balancing machines and other products can help you, click [here](#).

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