

# BALLBAR CAPABILITIES

Ensuring Accuracy and Repeatability of Measurements

Exclusive to Messer, The **Renishaw QC- 10 Ballbar** system, is used to measure geometric errors present in CNC machine tools to detect inaccuracies from the controller and servo drive systems. The Ballbar system along with special tooling allows precise measurement on various cutting tools.

## SYSTEM DESCRIPTION

Errors are measured in the software by instructing the machine to 'Perform a Ballbar Test' which scribes a circular arc or circle which small deviations are measured by a transducer and plotted to a screen, printer or plotter to show how the machine performed the test. A error free test will result in a perfect circle and any errors will distort the circle, by adding peaks along its circumference and possibly making it more elliptical.

Deviations from a perfect circle reveal issues and inaccuracies in the numerical control, drive servos and the machine's axes.

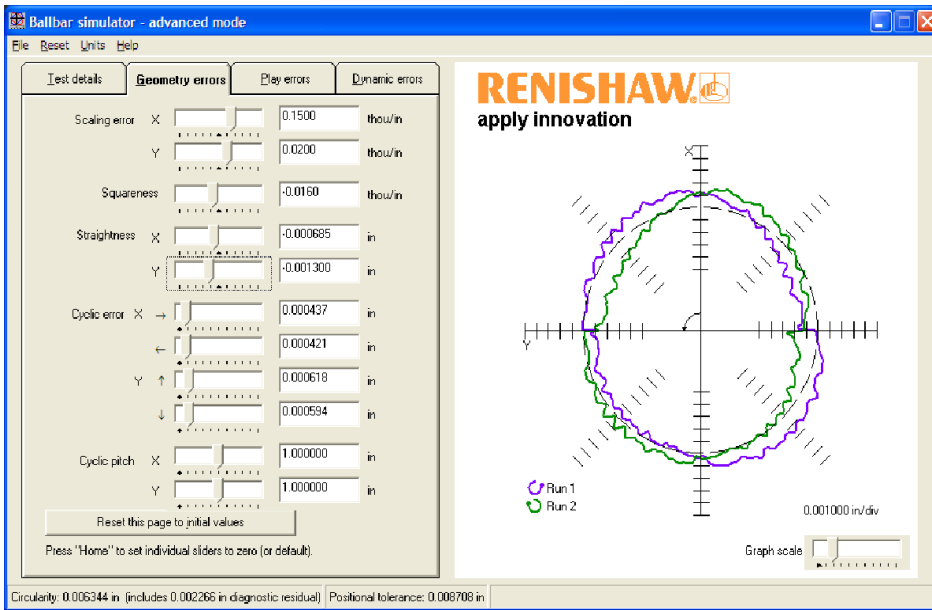


**The Ballbar has one end connected to the tip of the cutting torch and the other end to the fixed base. The machine is commanded to scribe two circles at various cutting speeds while transducer data is collected by the interface. After the data is collected, the software will calculate and plot the results for analysis.**



**Special accessories used for measuring.**

# BALL BAR CAPABILITIES FOR ACCURACY ASSURANCE



**Sample plot of actual data from a bi-directional Ballbar test run at 130 IPM on an MPC2000 cutting machine. This is one of several analysis tools used to measure and diagnose drive performance, straightness of ways, backlash, and vibrations etc.**