

Technical Note

WOOD MACHINING & TOOLING RESEARCH

WMTRP TECHNICAL NOTE: CNC ROUTER BALANCE PROBLEMS

Balance related vibration problems are four times more severe on 30,000 rpm spindles than on 15,000 rpm spindles. Excessive vibration causes premature bearing failure, accelerated tool wear, poor surface quality, and tool breakage. WMTRP research has focused on these problems for several years. Research and development in this area has moved beyond tool and chuck balance tolerancing and balancing procedures to the development of on board vibration detection and balancing systems. For tool changer type machines, balanceable tool holders combined with table-top tool/chuck balancers are widely used in the metal working industry and are a viable approach for woodworking applications. Improvements in tool chucking accuracy and rigidity afforded by hydraulic and heat shrink type chucks, combined with the use of well-balanced tools, is helping spindles operate successfully at very high rpms. The next step, on board unbalance detection and balance correction devices, will enable spindle speeds to continue to be increased.



Balancing Machine for Tools and Chucks



Hydraulic Chuck for Router

Note: These technical notes are intended to help keep the woodworking industry informed about technology and research results that can help improve productivity and wood utilization.

For more information on WMTRP research activities please contact Mr. Richard Lemaster, WMTRP, Box 8005, NC State University, Raleigh, NC 27695. Phone: 919 515-1548, Fax: 919 513-3496 E-mail: richard_lemaster@ncsu.edu. WMTRP web site: www2.ncsu.edu/wmtrp