

What travel speed should I use on my CNC?

There is no easy right answer. There are guidelines. The smaller the diameter the faster the RPM needs to be and the slower the feed rate should be. When using a cutter that is 1/4" diameter or smaller the RPM setting needs to be as high as possible. Travel speed is dependent on depth of cut (chip load) and material. As an example, a good jumping off point for testing a cutter 3/8" or larger is 18,000 RPM, at 300 Feed Rate for a 1/2" depth of cut in particle board. Increase the Feed Rate to suit cut and material. It is important to note that a cutter traveling too slow (either RPM or Feed Rate) will burn. A cutter traveling too fast (feed rate) will chip and tear out.

Did you know that the center of any revolving/rotating cutter is standing still? That is why the smaller diameter cutters need to be ran at the highest RPM. The table below shows the "Surface Feet Per Minute" comparison from size to size.

formula: Circumference of Cutter in inches (multiplied by) RPM (divided by) 12" = Surface Feet per Minute

Size	Circumference	RPM	Equals	divided by	SFM
1/8"	.3927	20,000	7,854"	12	655'
1/4"	.7854	20,000	15,708"	12	1,309'
3/8"	1.1781"	20,000	23,562"	12	1,964'
1/2"	1.5708"	20,000	31,416"	12	2,618'
5/8"	1.9635"	20,000	39,270"	12	3,273'
3/4"	2.3562"	20,000	47,124"	12	3,927'
1"	3.1416"	20,000	62,832"	12	5,236'
1-1/4"	3.927"	20,000	78,540"	12	6,545'
1-3/8"	4.3197"	20,000	86,394"	12	7,200'

Surface feet per minute = cutting edge speed: the speed the cutting edge is moving through the material. Maximum cutting edge speed not to exceed 18,000 SFM.

What size cutter do I use to make a dado?

As we have all discovered, all lumber is not created equal. To determine what size dado to make it's best to mike the material thickness. We have found that miking a few pieces will provide a clear picture of the general thickness of the material. Once the general thickness is known, then finding the correct diameter tool is much easier.

What's so important about carbide tooling running cooler?

Bottom line, longer tool life. Too much heat will dull the carbide edge prematurely. Some tooling is designed to reduce heat build up by creating their own air draft when being used. Most carbide tooling can benefit from having an air draft when in use. Wood chips remaining in a cut add heat to the tooling. The friction of cutting is where most heat is generated.