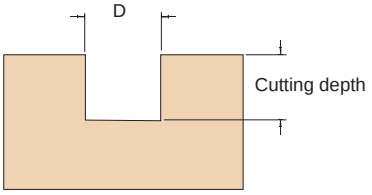
Feed rate for Solid Carbide Spiral Bits on CNC machines

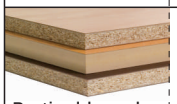
The following charts gives you the recommended feed rates for working with different spiral family groups on different wood types.
It is important to understand that these values are only recommendations, because of the dependency which we have between the cutting conditions and the non uniformity of the wood pieces. Wood fiber direction, wood type, wood humidity, clamping stiffness, machine stiffness etc. All these variables together or one by one can change the cutting condition totally.
It is recommended that in any new application you reach the recommended feed rate gradually and if the cutting quality is acceptable you can continue to increase the feed rate values.
Please remember the larger your chip per tip (high feed rate) the life time of the tool is increased.

Explanation of the charts:
Each chart is relating to one type of the different tool families on a different type of wood.
Each line on the chart is relating to cutting diameter of the tool, if you cannot find the exact diameter; please relate it as a parallel line to the existing lines.
All the information shown by the charts requires a rotation speed of 18,000 RPM, changing the rotation speed has proportionally direct relation to the feed rate. For example if your tool is rotating at 12,000 RPM you have to decrease the feed rate by the relation of 12,000/18,000.
Cutting depth is given with values which relate to the diameter. For example cutting diameter is 10mm and Cutting Depth is 20mm so it becomes a cutting depth of 2xD.



How to get a feed rate value from the chart:
1. You have to pick the right chart according to the tool family and the wood type.
2. Locate your line on the chart according to the cutting diameter size.
3. Evaluate your Cutting Depth according to the cutting diameter
   Make sure it is equal to 1xD or 1.5xD or 2xD etc.
4. Find the right feed rate according to the Cutting Depth on the chart.

Selecting The right Tool Family

	 Routing Spiral Z=3	 Chipbreaker Z=3	 Up Shear & Down Shear Z=2	 Up Shear & Down Shear Z=2 Solid Wood	 Up Shear & Down Shear Z=3	 Compression Z=1 Solid	 Compression Z=2
 Partical boards laminate / without laminate	✓✓✓ Excellent	✗ Not Recommended	✓✓✓ Excellent	✗ Not Recommended	✓✓✓ Excellent	✗ Not Recommended	✓✓✓ Excellent
 plywood laminate / without laminate	✓✓✓ Excellent	✗ Not Recommended	✓✓✓ Excellent	✗ Not Recommended	✓✓✓ Excellent	✗ Not Recommended	✓✓✓ Excellent
 hard wood	✓✓✓ Excellent	✓✓✓ Excellent	✓ Fair	✓✓✓ Excellent	✓✓ Good	✓✓✓ Excellent	✓✓ Good
 soft wood	✓✓✓ Excellent	✓✓✓ Excellent	✓✓ Good	✓✓✓ Excellent	✓✓ Good	✓✓✓ Excellent	✓ Fair

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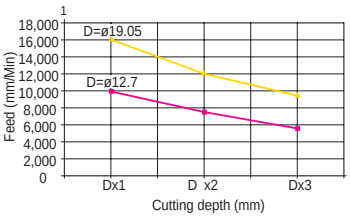
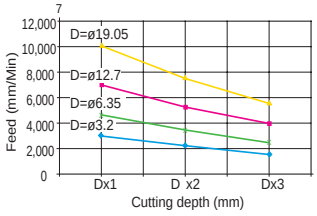
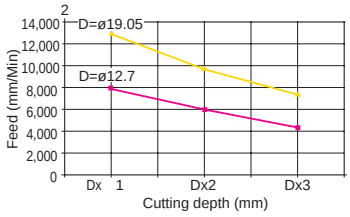
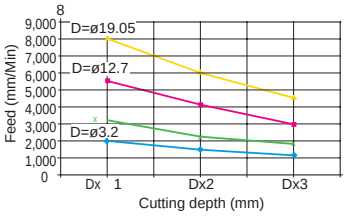
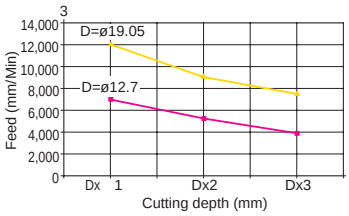
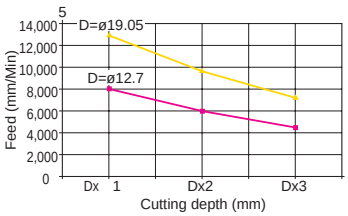
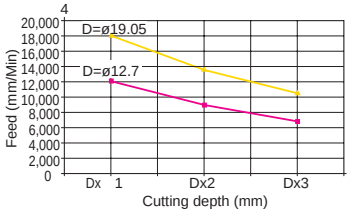
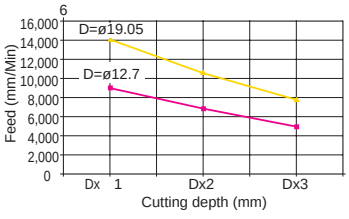
	Routing Spiral Z=3	Chipbreaker Z=3	Up Shear & Down Shear Z=2
 Particl boards laminate / without laminate	 R.P.M. = 18,000		 R.P.M. = 18,000
 plywood laminate / without laminate	 R.P.M. = 18,000		 R.P.M. = 18,000
 hard wood	 R.P.M. = 18,000	 R.P.M. = 18,000	
 soft wood	 R.P.M. = 18,000	 R.P.M. = 18,000	

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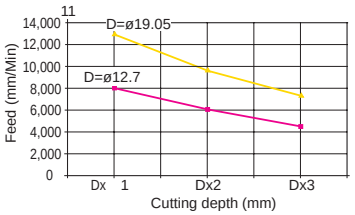
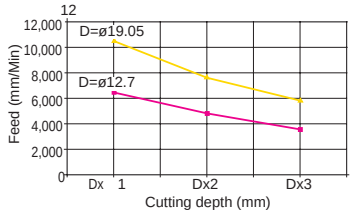
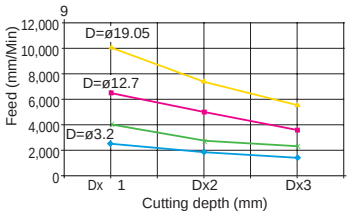
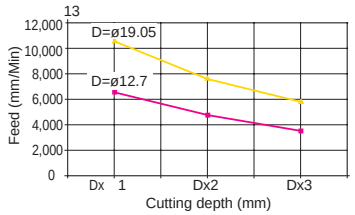
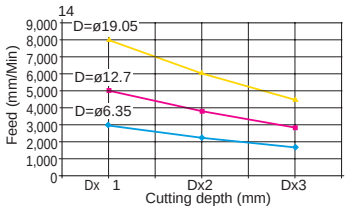
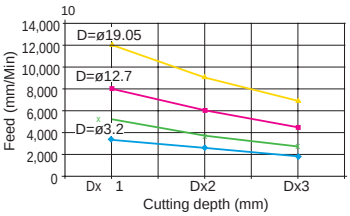
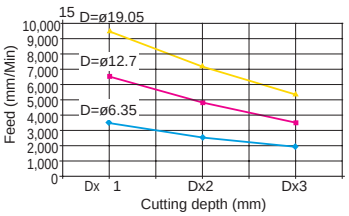
	Up Shear & Down Shear Z=2 Solid Wood	Up Shear & Down Shear Z=3	Compression Z=1 Solid
 Particl boards laminate / without laminate		 R.P.M. = 18,000	
 plywood laminate / without laminate		 R.P.M. = 18,000	
 hard wood	 R.P.M. = 18,000	 R.P.M. = 18,000	 R.P.M. = 18,000
 soft wood			

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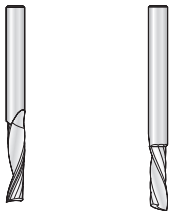
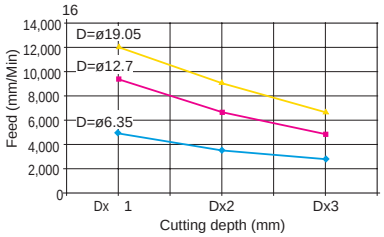
Compression
Z=2

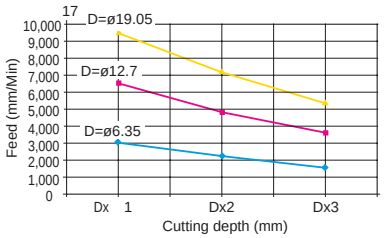


Particl boards
laminate /
without laminate



R.P.M. = 18,000

plywood
laminate /
without laminate



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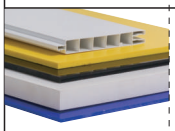
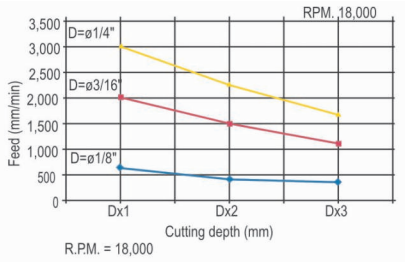


Plastic



R.P.M. = 18,000

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