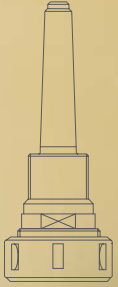
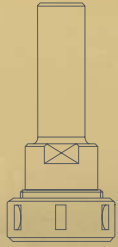


Morse Adapter



Straight Adapter

With ER Collet



With Arbor



ISO Adapter

Pull Stud



With ER Collet



With Arbor



HSK Adapter

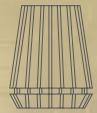
With ER Collet



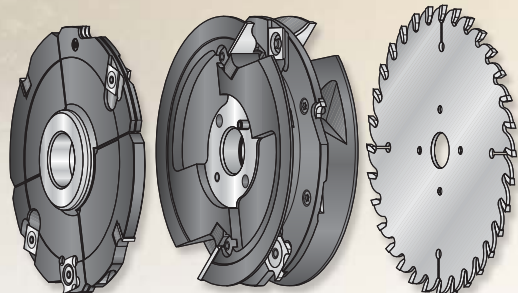
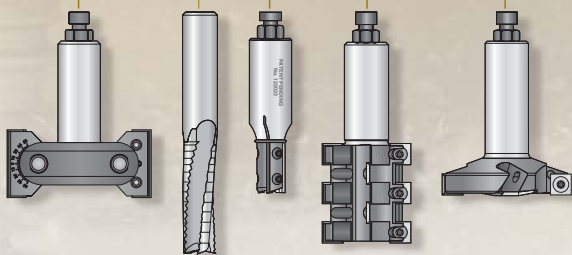
With Arbor



ER Collet 32,40



Straight Adapter

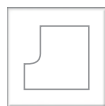




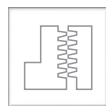
CNC



Grooving & Sizing



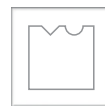
Profiling & Chamfering



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Frame & Panel door



Carving



Clamping Systems & Adapters

Feed rate chart for spiral tools on CNC machines

The following chart 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 OK 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.

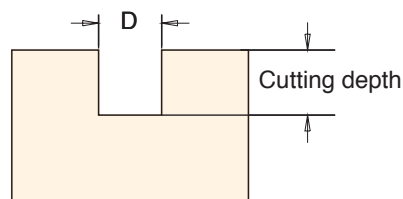
Each line on a chart is relating to the cutting diameter of the tool, if you cannot find the exact diameter, please relate it as a parallel line to the existing lines.

All the information on the charts require a rotation speed of 18,000 RPM changing the rotation speed has a proportionally straight 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.

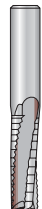




Cutting depth or wood thickness is given with values which relate to the diameter For example cutting diameter is 10 mm and wood thickness is 20 mm so it becomes a cutting depth of 2xD.

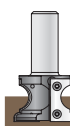
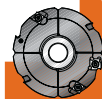
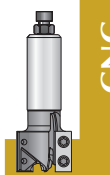
How to get a feed rate value from the chart.

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 diameter size.
3. Evaluate your wood thickness according to the cutting diameter - is it equal to 1xD or 2xD or 1.5x D etc.
4. Find the right feed rate according to the wood thickness on the chart.



Selecting The Right Tool Family

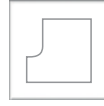
	 Routing Spiral Z=3	 Chipbreaker Z=3	 Up Shear & Down Shear Z=2	 Up Shear & Down Shear Z=2 Solid Wood	 Up Shear & Down Shear Z=3	 Compression Z=1 Solid	 Compression Z=2
	✓✓✓ Excellent	✗ Not Recommended	✓✓✓ Excellent	✗ Not Recommended	✓✓✓ Excellent	✗ Not Recommended	✓✓✓ Excellent
	✓✓✓ Excellent	✗ Not Recommended	✓✓✓ Excellent	✗ Not Recommended	✓✓✓ Excellent	✗ Not Recommended	✓✓✓ Excellent
	✓✓✓ Excellent	✓✓✓ Excellent	✓ Fair	✓✓✓ Excellent	✓✓ Good	✓✓✓ Excellent	✓✓ Good
	✓✓✓ Excellent	✓✓✓ Excellent	✓✓ Good	✓✓✓ Excellent	✓✓ Good	✓✓✓ Excellent	✓ Fair



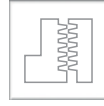
CNC



Grooving & Sizing



Profiling & Chamfering



Jointing & Rebating



Frame & Panel door



Carving



Clamping Systems & Adapters



Index

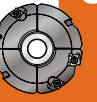
Sawing



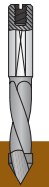
CNC



Cutting



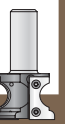
Drilling



Routing



Custom Tooling



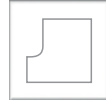
	Routing Spiral Z=3	Chipbreaker Z=3	Up Shear & Down Shear Z=2
particle boards laminate /unlaminare	<p>1</p>		<p>7</p>
plywood laminate /unlaminare	<p>2</p>		<p>8</p>
hard wood	<p>3</p>	<p>5</p>	
soft wood	<p>4</p>	<p>6</p>	



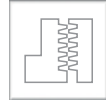
CNC



Grooving & Sizing



Profiling & Chamfering



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Carving



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Index

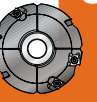
Sawing



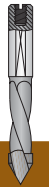
CNC



Cutting



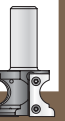
Drilling



Routing



Custom Tooling



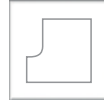
	Up Shear & Down Shear Z=2 Solid Wood	Up Shear & Down Shear Z=3	Compression Z=1 Solid																																												
particle boards laminated /unlaminated		<table border="1"> <caption>Graph 11 Data</caption> <thead> <tr> <th>Cutting depth (mm)</th> <th>Feed (mm/Min) D=19.05</th> <th>Feed (mm/Min) D=12.7</th> </tr> </thead> <tbody> <tr> <td>Dx1</td> <td>~13,000</td> <td>~8,000</td> </tr> <tr> <td>Dx2</td> <td>~10,000</td> <td>~6,000</td> </tr> <tr> <td>Dx3</td> <td>~7,000</td> <td>~4,500</td> </tr> </tbody> </table>	Cutting depth (mm)	Feed (mm/Min) D=19.05	Feed (mm/Min) D=12.7	Dx1	~13,000	~8,000	Dx2	~10,000	~6,000	Dx3	~7,000	~4,500																																	
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plywood laminated /unlaminated		<table border="1"> <caption>Graph 12 Data</caption> <thead> <tr> <th>Cutting depth (mm)</th> <th>Feed (mm/Min) D=19.05</th> <th>Feed (mm/Min) D=12.7</th> </tr> </thead> <tbody> <tr> <td>Dx1</td> <td>~11,000</td> <td>~7,000</td> </tr> <tr> <td>Dx2</td> <td>~8,000</td> <td>~5,000</td> </tr> <tr> <td>Dx3</td> <td>~6,000</td> <td>~4,000</td> </tr> </tbody> </table>	Cutting depth (mm)	Feed (mm/Min) D=19.05	Feed (mm/Min) D=12.7	Dx1	~11,000	~7,000	Dx2	~8,000	~5,000	Dx3	~6,000	~4,000																																	
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hard wood	<table border="1"> <caption>Graph 9 Data</caption> <thead> <tr> <th>Cutting depth (mm)</th> <th>Feed (mm/Min) D=19.05</th> <th>Feed (mm/Min) D=12.7</th> <th>Feed (mm/Min) D=3.2</th> </tr> </thead> <tbody> <tr> <td>Dx1</td> <td>~10,000</td> <td>~6,000</td> <td>~4,000</td> </tr> <tr> <td>Dx2</td> <td>~8,000</td> <td>~5,000</td> <td>~3,000</td> </tr> <tr> <td>Dx3</td> <td>~6,000</td> <td>~4,000</td> <td>~2,500</td> </tr> </tbody> </table>	Cutting depth (mm)	Feed (mm/Min) D=19.05	Feed (mm/Min) D=12.7	Feed (mm/Min) D=3.2	Dx1	~10,000	~6,000	~4,000	Dx2	~8,000	~5,000	~3,000	Dx3	~6,000	~4,000	~2,500	<table border="1"> <caption>Graph 13 Data</caption> <thead> <tr> <th>Cutting depth (mm)</th> <th>Feed (mm/Min) D=19.05</th> <th>Feed (mm/Min) D=12.7</th> </tr> </thead> <tbody> <tr> <td>Dx1</td> <td>~11,000</td> <td>~6,000</td> </tr> <tr> <td>Dx2</td> <td>~8,000</td> <td>~4,500</td> </tr> <tr> <td>Dx3</td> <td>~6,000</td> <td>~3,500</td> </tr> </tbody> </table>	Cutting depth (mm)	Feed (mm/Min) D=19.05	Feed (mm/Min) D=12.7	Dx1	~11,000	~6,000	Dx2	~8,000	~4,500	Dx3	~6,000	~3,500	<table border="1"> <caption>Graph 14 Data</caption> <thead> <tr> <th>Cutting depth (mm)</th> <th>Feed (mm/Min) D=19.05</th> <th>Feed (mm/Min) D=12.7</th> <th>Feed (mm/Min) D=6.35</th> </tr> </thead> <tbody> <tr> <td>Dx1</td> <td>~8,000</td> <td>~6,000</td> <td>~4,000</td> </tr> <tr> <td>Dx2</td> <td>~6,000</td> <td>~4,500</td> <td>~3,000</td> </tr> <tr> <td>Dx3</td> <td>~5,000</td> <td>~3,500</td> <td>~2,500</td> </tr> </tbody> </table>	Cutting depth (mm)	Feed (mm/Min) D=19.05	Feed (mm/Min) D=12.7	Feed (mm/Min) D=6.35	Dx1	~8,000	~6,000	~4,000	Dx2	~6,000	~4,500	~3,000	Dx3	~5,000	~3,500	~2,500
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Dx2	~6,000	~4,500	~3,000																																												
Dx3	~5,000	~3,500	~2,500																																												
soft wood	<table border="1"> <caption>Graph 10 Data</caption> <thead> <tr> <th>Cutting depth (mm)</th> <th>Feed (mm/Min) D=19.05</th> <th>Feed (mm/Min) D=12.7</th> <th>Feed (mm/Min) D=3.2</th> </tr> </thead> <tbody> <tr> <td>Dx1</td> <td>~12,000</td> <td>~8,000</td> <td>~4,000</td> </tr> <tr> <td>Dx2</td> <td>~10,000</td> <td>~6,000</td> <td>~3,500</td> </tr> <tr> <td>Dx3</td> <td>~8,000</td> <td>~5,000</td> <td>~3,000</td> </tr> </tbody> </table>	Cutting depth (mm)	Feed (mm/Min) D=19.05	Feed (mm/Min) D=12.7	Feed (mm/Min) D=3.2	Dx1	~12,000	~8,000	~4,000	Dx2	~10,000	~6,000	~3,500	Dx3	~8,000	~5,000	~3,000		<table border="1"> <caption>Graph 15 Data</caption> <thead> <tr> <th>Cutting depth (mm)</th> <th>Feed (mm/Min) D=19.05</th> <th>Feed (mm/Min) D=12.7</th> <th>Feed (mm/Min) D=6.35</th> </tr> </thead> <tbody> <tr> <td>Dx1</td> <td>~10,000</td> <td>~7,000</td> <td>~4,000</td> </tr> <tr> <td>Dx2</td> <td>~8,000</td> <td>~5,500</td> <td>~3,500</td> </tr> <tr> <td>Dx3</td> <td>~6,000</td> <td>~4,500</td> <td>~3,000</td> </tr> </tbody> </table>	Cutting depth (mm)	Feed (mm/Min) D=19.05	Feed (mm/Min) D=12.7	Feed (mm/Min) D=6.35	Dx1	~10,000	~7,000	~4,000	Dx2	~8,000	~5,500	~3,500	Dx3	~6,000	~4,500	~3,000												
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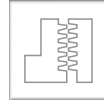
CNC



Grooving & Sizing



Profiling & Chamfering



Jointing & Rebating



Frame & Panel door



Carving



Clamping Systems & Adapters



Index

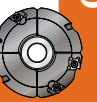
Sawing



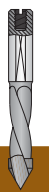
CNC



Cutting



Drilling




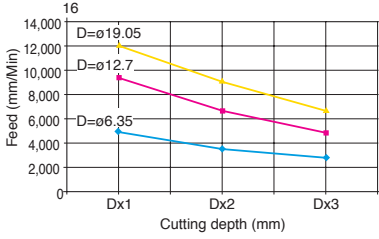

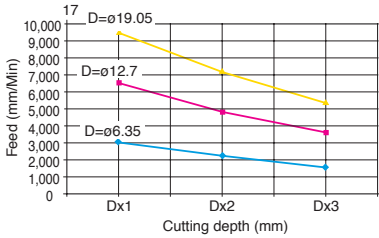
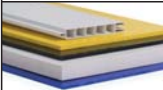
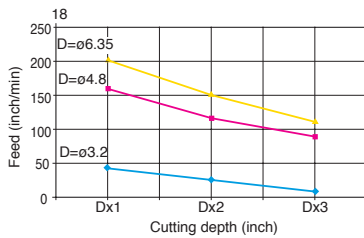



Routing



Custom Tooling



	 <p>Compression Z=2</p>	 <p>Super finish up cut 0 solid Z=1</p>
 <p>particle boards laminare /unlaminare</p>		
 <p>plywood laminare /unlaminare</p>		
 <p>Plastic</p>		
 <p>Aluminum</p>		