

2 Flute Solid Carbide Spiral Plunge

CNC Operating Spindle Speed: 12,000 RPM / Depth of Cut: 1 x Tool Diameter †

(Up or Down)	Chipload Per Tooth	Feed Rate(inch/min)	Cutting Dia	Tool Reference #' s		
				UP	DOWNUP	Cut Dia.
Soft Wood	0.001	24	1/16"	W04003	W04011	1/2"
	0.003	72	1/8"	W04012	W04002	1/2"
	0.005	120	1/4"	W04005	W04004	1/4"
	0.007	170	3/8"	W04014	W04013	1/4"
	0.01	240	1/2"	W04016	W04015	1/4"
Hard Wood	0.001	24	1/16"	W04020	W04019	1/4"
	0.003	72	1/8"	W04007	W04006	1/8"
	0.004	100	1/4"	W04017	W04018	1/8"
	0.006	140	3/8"	W04021		1/8"
	0.08	190	1/2"	W04001	W04009	3/8"
				W04010	W04008	3/8"

*IPM Inches per minute

*Depth of cutting: 2xD Reduce feed rate by 30%

3xD Reduce feed rate by 50%

Simple machining calculations: Feed rate=chipload per tooth * number of tooth * RPM

*This chart is a recommended starting point for regular flute length;
It does not warranty against tool break, consult your machine's owners manual for
bit capacities and recommended feed rate

*Always start your test with a lower feed rate

*Make overhang of tool as short as possible in condition on non-interference

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2 Flute Solid Carbide Spiral Router Bits

CNC Operating Spindle Speed: 12,000 RPM / Depth of Cut: 1 x Tool Diameter †

Compression (Up&Down)	Chipload Per Tooth	Feed Rate(inch/min)	Cutting Dia	Tool Reference #’ s	
				Item No.	Cut Dia.
MDF/HDF	0.006	140	1/8"	W02001	1/2"
	0.01	240	1/4"	W02006	
	0.014	330	3/8"	W02003	1/4"
	0.016	380	1/2"	W02007	
Laminate	0.01	240	1/8"	W02004	1/8"
	0.015	360	1/4"	W02005	
	0.018	430	3/8"	W02002	3/8"
	0.02	480	1/2"		
Plywood	0.01	240	1/8"		
	0.015	360	1/4"		
	0.018	430	3/8"		
	0.02	480	1/2"		

*IPM Inches per minute

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3xD Reduce feed rate by 50%

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O Flute Solid Carbide Router Bits

CNC Operating Spindle Speed: 12,000 RPM / Depth of Cut: 1 x Tool Diameter †

O Flute	Chipload Per Tooth	Feed Rate(inch/min)	Cutting Dia	Tool Reference #' s	
				Item No.	Cut Dia.
Plastic/Acrylic	0.004	100	1/8"	W03001	1/4"
	0.008	190	1/4"	W03003	
				W03004	
Aluminum	0.01	50	1/8"	W03002	1/8"
	0.015	70	1/4"	W03005	

*IPM Inches per minute

*Depth of cutting: 2xD Reduce feed rate by 30%

3xD Reduce feed rate by 50%

Simple machining calculations: Feed rate=chipload per tooth * number of tooth * RPM

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2 Flute Tapered Ball Nose Carbide Router Bit

CNC Operating Spindle Speed: 12,000 RPM / Depth of Cut: 1 x Tool Diameter †

Tapered Nose	Chipload Per Tooth	Feed Rate(inch/min)	Cutting Dia	Tool Reference #' s	
				Part#	Tip Dia.
Wood/MDF	0.0007	18	0.5mm	W01005 W01001	0.5mm
	0.001	25	1.0mm		
	0.002	48	1.5mm	W01006 W01007 W01002	1.0mm
	0.003	72	2.0mm		
	0.004	96	3.0mm		
	0.005	120	4.0mm	W01008 W01009 W01003	1.5mm
	0.001	25	1/32"		
	0.003	70	1/16"		
0.004	90	1/8"			
Plastic/Acrylic	0.0003	10	0.5mm	W01010 W01011 W01004	2.0mm
	0.0005	15	1.0mm		
	0.001	25	1.5mm	W01012 W01013	3.0mm
	0.0015	35	2.0mm		
	0.002	50	3.0mm		
	0.003	70	4.0mm	W01017 W01015 W01016 W01014	4.0mm
	0.0005	10	1/32"		
	0.001	25	1/16"		
0.002	50	1/8"			
Aluminum /Copper /Brass	0.0003	10	0.5mm	W01015 W01016	1/16"
	0.0005	15	1.0mm		
	0.001	25	1.5mm	W01014	1/32"
	0.0015	35	2.0mm		
	0.002	50	3.0mm		
	0.003	70	4.0mm		1/8"
	0.0005	10	1/32"		
	0.001	25	1/16"		
0.002	50	1/8"			

*IPM Inches per minute

*Depth of cutting: 2xD Reduce feed rate by 30%

3xD Reduce feed rate by 50%

Simple machining calculations: Feed rate=chipload per tooth * number of tooth * RPM

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2/3 Flute Aluminum Router Bit

CNC Operating Spindle Speed: 12,000 RPM / Depth of Cut: 1 x Tool Diameter †

2-Flute				Tool Reference #' s		
				2-Flute	Cut Dia.	
Aluminum /Copper /Brass	0.0008	30	1/32"	A02001	1/4"	
	0.0015	50	1/16"	A03002	1/8"	
	0.002	70	1/8"	A03001	1/16"	
	3-Flute					
	0.004	140	1/4"	A01001	1/2"	
	0.006	210	3/8"	A02002 A02005 A02009 A02010 A02011	1/4"	
3-Flute						
Aluminum /Copper /Brass	0.0008	40	1/32"	A03004	1/8"	
	0.0015	80	1/16"	A04001	3/8"	
	0.002	100	1/8"	A03003	1/16"	
	0.004	210	1/4"	A02003 A02004 A02007 A05001 A05002 A05003	5/16"	
	0.005	270	5/16"			
	0.006	320	3/8"			
	0.008	430	1/2"			

*IPM Inches per minute

*Depth of cutting: 2xD Reduce feed rate by 30%

3xD Reduce feed rate by 50%

Simple machining calculations: Feed rate=chipload per tooth * number of tooth * RPM

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2 Flute Solid Carbide Metal Router Bit

CNC Operating Spindle Speed: 12,000 RPM / Depth of Cut: 1 x Tool Diameter †

	Slotting		Roughing		2-Flute
	IPM	Flutes	IPM	Flutes	
Iron	0.0001	4	0.0001	4	1/32"
	0.00024	10	0.00027	10	1/16"
	0.00048	18	0.00055	20	1/8"
	0.00096	35	0.00108	40	1/4"
	0.0012	45	0.00135	50	5/16"
	0.00145	40	0.00153	55	3/8"
	0.00193	70	0.0021	75	1/2"
Steel	0.0001	4	0.0001	4	1/32"
	0.00022	8	0.00025	10	1/16"
	0.00044	15	0.00051	18	1/8"
	0.00088	30	0.00098	35	1/4"
	0.00112	40	0.0012	43	5/16"
	0.00138	50	0.00148	55	3/8"
	0.00186	60	0.00198	65	1/2"
Stainless	0.0001	4	0.0001	4	1/32"
	0.00024	10	0.00027	10	1/16"
	0.00048	18	0.00055	20	1/8"
	0.00096	35	0.00108	40	1/4"
	0.0012	45	0.00135	50	5/16"
	0.00145	40	0.00153	55	3/8"
	0.00193	70	0.0021	75	1/2"

Tool Reference #'s		
2-Flute		Cut Dia.
M02001	M02002	1/4"
M02003	M02004	
M03001		1/8"
M03008		
M04001		3/8"
M04002		
M03004		1/16"
M03006		
M05001	M05002	5/16"
M05003		
M03007	M03005	1/32"
M03002		3/32"

	Radial	Axial	Chipload	For metal router bit
Slotting	100%	100%	100%	≤3x
	100%	50%	80%	5x
	100%	47%	60%	8x
Roughing	100%	100%	100%	≤3x
	90%	75%	80%	5x
	80%	60%	60%	8x
Finishing	100%	100%	100%	≤3x
	100%	100%	85%	5x
	65%	100%	70%	8x

*IPM Inches per minute

*Depth of cutting: 2xD Reduce feed rate by 30%

3xD Reduce feed rate by 50%

Simple machining calculations: Feed rate=chipload per tooth * number of tooth * RPM

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4 Flute Solid Carbide Metal Router Bit

CNC Operating Spindle Speed: 18,000 RPM / Depth of Cut: 1 x Tool Diameter †

	Slotting		Roughing		Finishing		4-Flute
Iron	0.0001	7	0.0001	7	0.00015	10	1/32"
	0.00024	15	0.00027	20	0.00042	30	1/16"
	0.00048	35	0.00055	40	0.00078	55	1/8"
	0.00096	70	0.00108	75	0.00145	100	1/4"
	0.0012	80	0.00135	100	0.00182	130	5/16"
	0.00145	100	0.00153	110	0.00211	150	3/8"
	0.00193	140	0.0021	150	0.00285	200	1/2"
Steel	0.0001	7	0.0001	7	0.00015	10	1/32"
	0.00022	15	0.00025	18	0.0004	28	1/16"
	0.00044	32	0.00051	38	0.00072	50	1/8"
	0.00088	65	0.00098	70	0.00138	100	1/4"
	0.00112	80	0.0012	85	0.00165	120	5/16"
	0.00138	100	0.00148	105	0.00198	140	3/8"
	0.00186	130	0.00198	140	0.00269	195	1/2"
Stainless	0.0001	7	0.0001	7	0.00015	10	1/32"
	0.00024	15	0.00027	20	0.00042	30	1/16"
	0.00048	35	0.00055	40	0.00078	55	1/8"
	0.00096	70	0.00108	75	0.00145	100	1/4"
	0.0012	85	0.00135	100	0.00182	130	5/16"
	0.00145	100	0.00153	110	0.00211	150	3/8"
	0.00193	140	0.0021	150	0.00285	200	1/2"

Tool Reference #'s		Cut Dia.
4-Flute		
M01001		1/2"
M02005	M02006	1/4"
M02007		
M03003		1/8"
M03011		
M03009		1/16"
M05004		5/16"
M03010		1/32"

	Radial	Axial	Chipload	For metal router bit
Slotting	100%	100%	100%	≤3x
	100%	50%	80%	5x
	100%	47%	60%	8x
Roughing	100%	100%	100%	≤3x
	90%	75%	80%	5x
	80%	60%	60%	8x
Finishing	100%	100%	100%	≤3x
	100%	100%	85%	5x
	65%	100%	70%	8x

*IPM Inches per minute

*Depth of cutting: 2xD Reduce feed rate by 30%

3xD Reduce feed rate by 50%

Simple machining calculations: Feed rate=chipload per tooth * number of tooth * RPM

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2+2 Wing Spoilboard Router Bit

CNC Operating Spindle Speed: 18,000 RPM / Depth of Cut: 1 x Tool Diameter †

Planer Router Bit	Chip Load	Feed Rate
Plywood	0.0081	290
Soildwood	0.0067	240
MDF	0.014	480
Softwood	0.016	600

Tool Reference #' s		
Part#	Wings	Cut Dia.
W05001	2	1"
W05002	3	2"
W05003	4	2-1/2"

*IPM Inches per minute

*Depth of cutting: 2xD Reduce feed rate by 30%

3xD Reduce feed rate by 50%

Simple machining calculations: Feed rate=chipload per tooth * number of tooth * RPM

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3 Wing Spoilboard Router Bit

CNC Operating Spindle Speed: 8,000 RPM / Max Cutting Depth Per Pass 1/16"

Planer Router Bit	Chip Load	Reed Rate
Plywood	0.007	350
Soildwood	0.006	300
MDF	0.012	500
Softwood	0.014	500

Tool Reference #' s		
Part#	Wings	Cut Dia.
W05001	2	1"
W05002	3	2"
W05003	4	2-1/2"

*IPM Inches per minute

*Depth of cutting: 2xD Reduce feed rate by 30%

3xD Reduce feed rate by 50%

Simple machining calculations: Feed rate=chipload per tooth * number of tooth * RPM

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V Groove Detail Carving Router Bit

CNC Operating Spindle Speed: 18,000 RPM / Depth of Cut: 1 x Tool Diameter †

	Solid Carbide		Carbide Tip		Signmake		Tool Reference #'s	
	Chip Load	Reed Rate	Chip Load	Reed Rate	Chip Load	Reed Rate	Part#	Cut Deg.
Hardwood	0.0024	90	0.0024	90	0.003	50	W06008	20°
Softwood	0.0024	90	0.0024	90	0.003	50	W06009	30°
Plastic	0.0024	90	0.0024	90	0.003	50	W06001	
Plywood	0.0024	90	0.0024	90	0.003	50	W06003	60°
MDF	0.0048	180	0.0048	180	0.006	100	W06006	
							W06002	
							W06005	90°
							W06007	

*IPM Inches per minute

*Depth of cutting: 2xD Reduce feed rate by 30%

3xD Reduce feed rate by 50%

Simple machining calculations: Feed rate=chipload per tooth * number of tooth * RPM

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