



# V4

## HIGH PERFORMANCE VARIABLE HELIX



**Chatter Free Parts**

**Faster Feed Rates**

**Longer Tool Life**

**PowerA Coated**

# V4 - POWERA 4 FLUTE FRACTIONAL STANDARD LENGTH



D1	L1	D2	L2	SQUARE	CR	CORNER RADIUS	BALL
1/8	3/8	1/8	1-1/2	V4-50200WF*	.01-.015	V4-50200R.015WF*	V4-50204WF*
1/8	3/8	1/8	1-1/2	V4-50200NF	.01-.015	V4-50200R.015NF	V4-50204NF
3/16	7/16	3/16	2	V4-50300WF*	.01-.015	V4-50300R.015WF*	V4-50304WF*
3/16	7/16	3/16	2	V4-50300NF	.01-.015	V4-50300R.015NF	V4-50304NF
1/4	5/8	1/4	2-1/2	V4-50500WF	.015-.02	V4-50500R.020WF	V4-50504WF
1/4	5/8	1/4	2-1/2	V4-50500NF	.015-.02	V4-50500R.020NF	V4-50504NF
5/16	13/16	5/16	2-1/2	V4-50600WF	.015-.02	V4-50600R.020WF	V4-50604WF
5/16	13/16	5/16	2-1/2	V4-50600NF	.015-.02	V4-50600R.020NF	V4-50604NF
3/8	7/8	3/8	2-1/2	V4-50700WF	.015-.02	V4-50700R.020WF	V4-50704WF
3/8	7/8	3/8	2-1/2	V4-50700NF	.015-.02	V4-50700R.020NF	V4-50704NF
7/16	1	7/16	2-3/4	V4-50800WF	.015-.02	V4-50800R.020WF	V4-50804WF
7/16	1	7/16	2-3/4	V4-50800NF	.015-.02	V4-50800R.020NF	V4-50804NF
1/2	1	1/2	3	V4-50900WF	.025-.03	V4-50900R.030WF	V4-50904WF
1/2	1	1/2	3	V4-50900NF	.025-.03	V4-50900R.030NF	V4-50904NF
1/2	1-1/4	1/2	3	V4-50900LWF	.025-.03	V4-50900LR.030WF	V4-50904LWF
1/2	1-1/4	1/2	3	V4-50900LNF	.025-.03	V4-50900LR.030NF	V4-50904LNF
9/16	1-1/8	9/16	3-1/2	V4-50910WF	.025-.03	V4-50910R.030WF	V4-50914WF
9/16	1-1/8	9/16	3-1/2	V4-50910NF	.025-.03	V4-50910R.030NF	V4-50914NF
5/8	1-1/4	5/8	3-1/2	V4-51000WF	.035-.04	V4-51000R.040WF	V4-51004WF
5/8	1-1/4	5/8	3-1/2	V4-51000NF	.035-.04	V4-51000R.040NF	V4-51004NF
3/4	1-1/2	3/4	4	V4-51100WF	.035-.04	V4-51100R.040WF	V4-51104WF
3/4	1-1/2	3/4	4	V4-51100NF	.035-.04	V4-51100R.040NF	V4-51104NF
1	1-1/2	1	4	V4-51300WF	.035-.04	V4-51300R.040WF	V4-51304WF
1	1-1/2	1	4	V4-51300NF	.035-.04	V4-51300R.040NF	V4-51304NF

# V4 - POWERA 4 FLUTE METRIC STANDARD LENGTH

D1	L1	D2	L2	SQUARE	CR	CORNER RADIUS	BALL
3	12	3	38	V4-81200WF*	.25-.38	V4-81200R.25WF*	V4-81204WF*
3	12	3	38	V4-81200NF	.25-.38	V4-81200R.25NF	V4-81204NF
4	14	4	50	V4-81300WF*	.25-.38	V4-81300R.25WF*	V4-81304WF*
4	14	4	50	V4-81300NF	.25-.38	V4-81300R.25NF	V4-81304NF
5	16	5	50	V4-81400WF*	.25-.38	V4-81400R.25WF*	V4-81404WF*
5	16	5	50	V4-81400NF	.25-.38	V4-81400R.25NF	V4-81404NF
6	19	6	63	V4-81450WF	.38-.51	V4-81450R.50WF	V4-81454WF
6	19	6	63	V4-81450NF	.38-.51	V4-81450R.50NF	V4-81454NF
8	19	8	63	V4-81550WF	.38-.51	V4-81550R.50WF	V4-81554WF
8	19	8	63	V4-81550NF	.38-.51	V4-81550R.50NF	V4-81554NF
10	22	10	70	V4-81650WF	.38-.51	V4-81650R.50WF	V4-81654WF
10	22	10	70	V4-81650NF	.38-.51	V4-81650R.50NF	V4-81654NF
12	25	12	75	V4-81750WF	.64-.76	V4-81750R.75WF	V4-81754WF
12	25	12	75	V4-81750NF	.64-.76	V4-81750R.75NF	V4-81754NF
14	25	14	88	V4-81800WF	.64-.76	V4-81800R.75WF	V4-81804WF
14	25	14	88	V4-81800NF	.64-.76	V4-81800R.75NF	V4-81804NF
16	32	16	88	V4-81850WF	.76-.89	V4-81850R.75WF	V4-81854WF
16	32	16	88	V4-81850NF	.76-.89	V4-81850R.75NF	V4-81854NF
18	36	18	100	V4-81900WF	.76-.89	V4-81900R.75WF	V4-81904WF
18	36	18	100	V4-81900NF	.76-.89	V4-81900R.75NF	V4-81904NF
20	38	20	100	V4-81950FWF	.76-.89	V4-81950R.75WF	V4-81954WF
20	38	20	100	V4-81950NF	.76-.89	V4-81950R.75NF	V4-81954NF
25	38	25	100	V4-82050WF	.76-.89	V4-82050R.75WF	V4-82054WF
25	38	25	100	V4-82050NF	.76-.89	V4-82050R.75NF	V4-82054NF

\* Mastercut Tool Corp. does not recommend adding a weldon flat on tools with a shank diameter under 1/4" or 6mm.

D1 - Cutting Diameter    L1 - Cutting Length    D2 - Shank Diameter    L2 - Overall Length    NF - Smooth Shank    WF - Weldon Flat

# V4 - POWERA 4 FLUTE FRACTIONAL STUB LENGTH



D1	L1	D2	L2	SQUARE	CR	CORNER RADIUS	BALL
1/8	1/4	1/8	1-1/2	V4-57000WF*	.01-.015	V4-57000R.015WF*	V4-57004WF*
1/8	1/4	1/8	1-1/2	V4-57000NF	.01-.015	V4-57000R.015NF	V4-57004NF
5/32	5/16	3/16	2	V4-56600WF*	.01-.015	V4-56600R.015WF*	V4-56604WF*
5/32	5/16	3/16	2	V4-56600NF	.01-.015	V4-56600R.015NF	V4-56604NF
3/16	3/8	3/16	2	V4-57100WF*	.01-.015	V4-57100R.015WF*	V4-57104WF*
3/16	3/8	3/16	2	V4-57100NF	.01-.015	V4-57100R.015NF	V4-57104NF
7/32	7/16	1/4	2	V4-57200WF	.01-.015	V4-57200R.015WF	V4-57204WF
7/32	7/16	1/4	2	V4-57200NF	.01-.015	V4-57200R.015NF	V4-57204NF
1/4	1/2	1/4	2	V4-57300WF	.015-.02	V4-57300R.020WF	V4-57304WF
1/4	1/2	1/4	2	V4-57300NF	.015-.02	V4-57300R.020NF	V4-57304NF
5/16	1/2	5/16	2	V4-57400WF	.015-.02	V4-57400R.020WF	V4-57404WF
5/16	1/2	5/16	2	V4-57400NF	.015-.02	V4-57400R.020NF	V4-57404NF
3/8	5/8	3/8	2	V4-57500WF	.015-.02	V4-57500R.020WF	V4-57504WF
3/8	5/8	3/8	2	V4-57500NF	.015-.02	V4-57500R.020NF	V4-57504NF
7/16	5/8	7/16	2-1/2	V4-57550WF	.015-.02	V4-57550R.020WF	V4-57554WF
7/16	5/8	7/16	2-1/2	V4-57550NF	.015-.02	V4-57550R.020NF	V4-57554NF
1/2	5/8	1/2	2-1/2	V4-57600WF	.025-.03	V4-57600R.030WF	V4-57604WF
1/2	5/8	1/2	2-1/2	V4-57600NF	.025-.03	V4-57600R.030NF	V4-57604NF
5/8	3/4	5/8	3	V4-57700WF	.035-.04	V4-57700R.040WF	V4-57704WF
5/8	3/4	5/8	3	V4-57700NF	.035-.04	V4-57700R.040NF	V4-57704NF
3/4	1	3/4	4	V4-57800WF	.035-.04	V4-57800R.040WF	V4-57804WF
3/4	1	3/4	4	V4-57800NF	.035-.04	V4-57800R.040NF	V4-57804NF

# V4 - POWERA 4 FLUTE METRIC STUB LENGTH

D1	L1	D2	L2	SQUARE	CR	CORNER RADIUS	BALL
3	6	3	38	V4-85200WF*	.25-.38	V4-85200R.25WF*	V4-85204WF*
3	6	3	38	V4-85200NF	.25-.38	V4-85200R.25NF	V4-85204NF
4	8	4	50	V4-85300WF*	.25-.38	V4-85300R.25WF*	V4-85304WF*
4	8	4	50	V4-85300NF	.25-.38	V4-85300R.25NF	V4-85304NF
5	10	5	50	V4-85400WF*	.25-.38	V4-85400R.25WF*	V4-85404WF*
5	10	5	50	V4-85400NF	.25-.38	V4-85400R.25NF	V4-85404NF
6	12	6	50	V4-85450WF	.38-.50	V4-85450R.50WF	V4-85454WF
6	12	6	50	V4-85450NF	.38-.50	V4-85450R.50NF	V4-85454NF
8	12	8	50	V4-85500WF	.38-.50	V4-85500R.50WF	V4-85504WF
8	12	8	50	V4-85500NF	.38-.50	V4-85500R.50NF	V4-85504NF
10	14	10	50	V4-85550WF	.38-.50	V4-85550R.50WF	V4-85554WF
10	14	10	50	V4-85550NF	.38-.50	V4-85550R.50NF	V4-85554NF
12	16	12	63	V4-85600WF	.64-.76	V4-85600R.75WF	V4-85604WF
12	16	12	63	V4-85600NF	.64-.76	V4-85600R.75NF	V4-85604NF

# V4 - POWERA 4 FLUTE FRACTIONAL LONG LENGTH

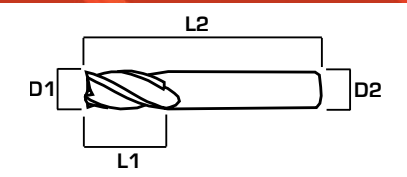
D1	L1	D2	L2	SQUARE	CR	CORNER RADIUS	BALL
1/4	1-1/8	1/4	3	V4-54200WF	.015-.02	V4-54200R.020WF	V4-54204WF
1/4	1-1/8	1/4	3	V4-54200NF	.015-.02	V4-54200R.020NF	V4-54204NF
5/16	1-1/8	5/16	3	V4-54300NF	.02	V4-54300R.020NF	V4-54304NF
5/16	1-1/8	5/16	3	V4-54300WF	.02	V4-54300R.020WF	V4-54304WF
3/8	1-1/8	3/8	3	V4-54400WF	.015-.02	V4-54400R.020WF	V4-54404WF
3/8	1-1/8	3/8	3	V4-54400NF	.015-.02	V4-54400R.020NF	V4-54404NF
1/2	2	1/2	4	V4-54600WF	.025-.03	V4-54600R.030WF	V4-54604WF
1/2	2	1/2	4	V4-54600NF	.025-.03	V4-54600R.030NF	V4-54604NF
5/8	2-1/4	5/8	5	V4-54800WF	.03-.035	V4-54800R.035WF	V4-54804WF
5/8	2-1/4	5/8	5	V4-54800NF	.03-.035	V4-54800R.035NF	V4-54804NF
3/4	2-1/4	3/4	5	V4-55000WF	.03-.035	V4-55000R.035WF	V4-55004WF
3/4	2-1/4	3/4	5	V4-55000NF	.03-.035	V4-55000R.035NF	V4-55004NF

# V4 - POWER 4 FLUTE METRIC LONG LENGTH



D1	L1	D2	L2	SQUARE	CR	CORNER RADIUS	BALL
3	20	3	65	V4-83000WF*	.25-.38	V4-83000R.25WF*	V4-83004WF*
3	20	3	65	V4-83000NF	.25-0.38	V4-83000R.25NF	V4-83004NF
4	20	4	65	V4-83050WF*	.25-.38	V4-83050R.25WF*	V4-83054WF*
4	20	4	65	V4-83050NF	.25-.38	V4-83050R.25NF	V4-83054NF
5	20	5	75	V4-83100WF*	.25-.38	V4-83100R.25WF*	V4-83104WF*
5	20	5	75	V4-83100NF	.25-.38	V4-83100R.25NF	V4-83104NF
6	25	6	75	V4-83150WF	.38-.51	V4-83150R.50WF	V4-83154WF
6	25	6	75	V4-83150NF	.38-.51	V4-83150R.50NF	V4-83154NF
8	25	8	75	V4-83200WF	.38-.51	V4-83200R.50WF	V4-83204WF
8	25	8	75	V4-83200NF	.38-.51	V4-83200R.50NF	V4-83204NF
10	38	10	100	V4-83250WF	.38-.51	V4-83250R.50WF	V4-83254WF
10	38	10	100	V4-83250NF	.38-.51	V4-83250R.50NF	V4-83254NF
12	50	12	100	V4-83300WF	.64-.76	V4-83300R.75WF	V4-83304WF
12	50	12	100	V4-83300NF	.64-.76	V4-83300R.75NF	V4-83304NF
14	56	14	125	V4-83350WF	.64-.76	V4-83350R.75WF	V4-83354WF
14	56	14	125	V4-83350NF	.64-.76	V4-83350R.75NF	V4-83354NF

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D1 - Cutting Diameter  
 L1 - Cutting Length  
 D2 - Shank Diameter  
 L2 - Overall Length  
 NF - Smooth Shank  
 WF - Weldon Flat

## FRACTIONAL SPEED AND FEED RECOMMENDATIONS

Material	Surface Feet Per Min.	Chip Load Per Tooth (CLPT)			
		1/8	1/4	1/2	1
Aluminium Alloys	1,200	0.0010	0.0020	0.0040	0.0080
Carbon Steel	300 - 600	0.0010	0.0015	0.0030	0.0060
Cast Iron	350 - 550	0.0010	0.0015	0.0030	0.0060
Copper Alloys	500 - 900	0.0010	0.0020	0.0030	0.0060
Steel (Annealed)	350 - 500	0.0010	0.0020	0.0030	0.0050
Steel (18-24 HRC)	150 - 500	0.0004	0.0008	0.0015	0.0045
Steel (25-37 HRC)	125 - 200	0.0003	0.0005	0.0010	0.0030
Stainless Steel (Free Machining)	250 - 400	0.0005	0.0010	0.0020	0.0030
Stainless Steel (Other)	150 - 300	0.0005	0.0010	0.0020	0.0030
Inconel, Monel	60 - 100	0.0005	0.0010	0.0015	0.0030
Titanium	175 - 300	0.0005	0.0008	0.0015	0.0030

Recommended starting speeds and feeds for variable-helix endmills

## METRIC SPEED AND FEED RECOMMENDATIONS

Material	Surface M/Minute	Chip Load Per Tooth (CLPT)			
		3.175mm	6.35mm	12.7mm	25.4mm
Aluminium Alloys	366	0.0254	0.0508	0.1016	0.2032
Carbon Steel	91 - 183	0.0254	0.0381	0.0762	0.1524
Cast Iron	107 - 168	0.0254	0.0381	0.0762	0.1524
Copper Alloys	152 - 274	0.0254	0.0508	0.0762	0.1524
Steel (Annealed)	107 - 152	0.0254	0.0508	0.0762	0.127
Steel (18-24 HRC)	46 - 152	0.01016	0.02032	0.0381	0.1143
Steel (25-37 HRC)	38 - 61	0.00762	0.0127	0.0254	0.0762
Stainless Steel (Free Machining)	76 - 122	0.0127	0.0254	0.0508	0.0762
Stainless Steel (Other)	46 - 91	0.0127	0.0254	0.0508	0.0762
Inconel, Monel	18 - 30	0.0127	0.0254	0.0381	0.0762
Titanium	53 - 91	0.0127	0.02032	0.0381	0.0762



Cutting Edge Technology

**MASTERCUT TOOL CORP.**

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