



Kodiak Cutting Tools VI-PRO

Kodiak Cutting Tools

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kodiakcuttingtools.com

- Running @ higher SFM; heavier chip loads than conventional endmills
- Speed and feed chart parameters are for 4 flute full diameter slotting
- Recommended slotting depth = 1 x diameter
- Tool holding important for maximizing tool life. Minimize TIR
- Max ramp angle recommended 3° or less

Speed and Feed Calculation:

$$\text{RPM} = (3.82 \times \text{SFM}) \div \text{Dia.}$$

$$\text{IPR} = \text{IPM} \div \text{RPM}$$

$$\text{SFM} = (\text{RPM} \times \text{Dia.}) \div 3.82$$

$$\text{IPM} = \text{IPT}(\text{chip load}) \times \text{No. of Teeth} \times \text{RPM}$$

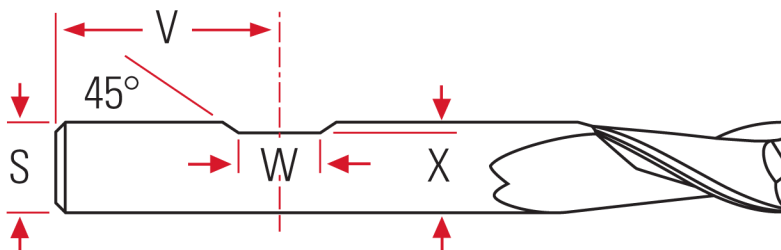
$$\text{IPT}(\text{chip load}) = \text{IPM} \div (\text{No. of teeth} \times \text{RPM})$$

ALTIN & ALCRO-MAX coating for the VI-PRO

ALTIN - is a high performance coating for milling, tapping and drilling in stainless steels, carbon steels, alloy steels, and cast iron. This coating is extremely heat resistant and can be used with or without coolant. It is exceptional in difficult to machine materials where adhesive wear is particularly high.

ALCRO-MAX - has remarkable wear resistance at higher speeds and feeds due to excellent thermal properties under high mechanical loads, and can be used for roughing and finishing operations. Because of its chromium addition, surface finish of the work piece (Ra, Rz) remains consistent and low during the life of the tool. ALCRO-MAX particularly excels when machining under wet or MQL (minimum quantity lubrication) conditions. This coating is highly recommended for titanium, high temperature alloys, and hardened and tempered tool steels with 35 HRC or greater.

Weldon Flat specifications for the VI-PRO



STUB LENGTH

S SHANK DIAMETER	V	W		X
		MIN	MAX	
1/2"	.750"	.330"	.332"	.440"
5/8"	.750"	.400"	.402"	.560"
3/4"	.750"	.455"	.457"	.675"

REGULAR LENGTH

S SHANK DIAMETER	V	W		X
		MIN	MAX	
1/2" (1-1/4" LOC)	.750"	.330"	.332"	.440"
1/2"	.875"	.330"	.332"	.440"
5/8"	.875"	.400"	.402"	.560"
3/4"	.875"	.455"	.457"	.675"
1"	.875"	.515"	.517"	.925"

LONG LENGTH

S SHANK DIAMETER	V	W		X
		MIN	MAX	
1/2" (2" LOC)	.875"	.330"	.332"	.440"
1/2"	1.250"	.330"	.332"	.440"
5/8"	1.250"	.400"	.402"	.560"
3/4"	1.250"	.455"	.457"	.675"
1"	1.250"	.515"	.517"	.925"

EXTRA LONG LENGTH

S SHANK DIAMETER	V	W		X
		MIN	MAX	
1/2"	1.5"	.330"	.332"	.440"
5/8"	1.5"	.400"	.402"	.560"
3/4"	1.5"	.455"	.457"	.675"
1"	1.5"	.515"	.517"	.925"
-	-	-	-	-

VI-PRO ENDMILLS - CARBIDE

VI-PRO
4 FLUTE**SFM FOR ALTiN, FOR ALCRO-MAX INCREASE UP TO 20%**

MATERIAL / TYPE	Rc HARDNESS	4 FLUTE STUB LENGTH	4 FLUTE REG LENGTH	4 FLUTE LONG LENGTH	4 FLUTE EXTRA LONG
COBALT BASE ALLOYS					
STELLITE, HS-21,	UNDER 32	125 - 175	125 - 175	80 - 125	80 - 125
HAYNES 25/188, X-40, L-605	OVER 32	80 - 100	80 - 100	55 - 70	55 - 70
NICKEL BASE ALLOYS					
INCONEL-625/718, WASPALLOY,	UNDER 32	125 - 175	125 - 175	80 - 125	80 - 125
RENE, HASTELLOY	OVER 32	80 - 100	80 - 100	55 - 70	55 - 70
IRON BASE ALLOYS					
INCOLOY 800-802, MULTIMET N-155,	UNDER 32	125 - 175	125 - 175	80 - 125	80 - 125
TIMKIN 16-25-6, CARPENTER 22-b3	OVER 32	80 - 100	80 - 100	55 - 70	55 - 70
MONEL					
MONEL-65% NICKEL	-	150 - 200	150 - 200	105 - 140	105 - 140
TITANIUM ALLOYS					
COMMERCIALLY PURE, 6Al-4V,	-	-	-	-	-
ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	-	200 - 325	200 - 325	140 - 230	140 - 230
STAINLESS STEEL (PRECIPITATION)					
12/8, 15/5, 17/4, AM-350/355	UNDER 32	250 - 300	250 - 300	175 - 210	175 - 210
	OVER 32	200 - 250	200 - 250	140 - 175	140 - 175
STAINLESS STEEL (AUSTENITIC)					
200 SERIES, 302, 303, 304, 316	-	290 - 375	290 - 375	200 - 260	200 - 260
STAINLESS STEEL (AUSTENITIC)					
304L, 316L	UNDER 32	250 - 300	250 - 300	175 - 210	175 - 210
	OVER 32	200 - 250	200 - 250	140 - 175	140 - 175
STAINLESS STEEL (MARTENSITIC)					
403, 410, 416, 440	-	250 - 300	250 - 300	175 - 210	175 - 210
HIGH STRENGTH TOOL STEELS					
4140, 4340, 6150, 5210, A2,	UNDER 32	250 - 350	250 - 350	175 - 210	175 - 210
D2, P20, H11, H13, S2, O1	OVER 32	150 - 200	150 - 200	100 - 140	100 - 140
CARBON STEELS					
1000's, 1100's, 1300's	-	560 - 595	560 - 595	300 - 500	300 - 500
DUCTILE					
DUCTILE CAST IRONS	-	560 - 595	560 - 595	400 - 500	400 - 500
CAST IRONS					
GRAY CAST IRONS	-	560 - 595	560 - 595	400 - 500	400 - 500

Speed and feed chart parameters are for 4 flute full diameter slotting

Recommended slotting depth = 1 x diameter

Tool holding important for maximizing tool life. Minimize TIR

Max ramp angle recommended 3° or less

VI-PRO ENDMILLS - CARBIDE

VI-PRO 4 FLUTE

I.P.T. (Inch Per Tooth)

MATERIAL / TYPE	1/8"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"
COBALT BASE ALLOYS										
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	.0004 - .0008	.0005 - .0011	.0009 - .0016	.0010 - .0018	.0012 - .0019	.0014 - .0021	.0016 - .0028	.0019 - .0031	.0024 - .0037	.0029 - .0041
NICKEL BASE ALLOYS										
INCONEL-625/718, WASPALLOY, RENE, HASTELLOY	.0004 - .0008	.0005 - .0011	.0009 - .0016	.0010 - .0018	.0012 - .0019	.0014 - .0021	.0016 - .0028	.0019 - .0031	.0024 - .0037	.0029 - .0041
IRON BASE ALLOYS										
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	.0004 - .0008	.0005 - .0011	.0009 - .0016	.0010 - .0018	.0012 - .0019	.0014 - .0021	.0016 - .0028	.0019 - .0031	.0024 - .0037	.0029 - .0041
MONEL										
MONEL-65% NICKEL	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0018 - .0020	.0017 - .0019	.0019 - .0021	.0026 - .0028	.0029 - .0031	.0035 - .0037	.0039 - .0041
TITANIUM ALLOYS										
COMMERCIALLY PURE, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0018 - .0020	.0017 - .0019	.0019 - .0021	.0026 - .0028	.0029 - .0031	.0035 - .0037	.0039 - .0041
STAINLESS STEEL (PRECIPITATION)										
12/8, 15/5, 17/4, AM-350/355	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
STAINLESS STEEL (AUSTENITIC)										
200 SERIES, 302, 303, 304, 316	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
STAINLESS STEEL (AUSTENITIC)										
304L, 316L	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
STAINLESS STEEL (MARTENSITIC)										
403, 410, 416, 440	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
HIGH STRENGTH TOOL STEELS										
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, O1	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
CARBON STEELS										
1000's, 1100's, 1300'S	.0004 - .0008	.0011 - .0013	.0018 - .0020	.0024 - .0026	.0030 - .0032	.0033 - .0035	.0035 - .0037	.0039 - .0041	.0041 - .0043	.0054 - .0056
DUCTILE										
DUCTILE CAST IRONS	.0004 - .0008	.0011 - .0013	.0018 - .0020	.0024 - .0026	.0030 - .0032	.0033 - .0035	.0035 - .0037	.0039 - .0041	.0041 - .0043	.0054 - .0056
CAST IRONS										
GRAY CAST IRONS	.0004 - .0008	.0011 - .0013	.0018 - .0020	.0024 - .0026	.0030 - .0032	.0033 - .0035	.0035 - .0037	.0039 - .0041	.0041 - .0043	.0054 - .0056

Chip Thinning recommended for 4 Flute to optimize tool life:

5% of Diameter Radial engaged: Multiply Feed 3X
 10% of Diameter Radial engaged: Multiply Feed 2X
 20% of Diameter Radial engaged: Multiply Feed 1.5X

VI-PRO ENDMILLS - CARBIDE

VI-PRO
5 FLUTE**SFM FOR ALTIM, FOR ALCRO-MAX INCREASE UP TO +20%
FINISHING PASSES ONLY, 10% OF DIAMETER MAX**

MATERIAL / TYPE	Rc HARDNESS	5 FLUTE STUB LENGTH	5 FLUTE REG LENGTH	5 FLUTE LONG LENGTH	5 FLUTE EXTRA LONG
COBALT BASE ALLOYS					
STELLITE, HS-21,	UNDER 32	550 - 570	550 - 570	385 - 400	385 - 400
HAYNES 25/188, X-40, L-605	OVER 32	200 - 225	200 - 225	140 - 160	140 - 160
NICKEL BASE ALLOYS					
INCONEL-625/718, WASPALLOY,	UNDER 32	550 - 570	550 - 570	385 - 400	385 - 400
RENE, HASTELLOY	OVER 32	200 - 225	200 - 225	140 - 160	140 - 160
IRON BASE ALLOYS					
INCOLOY 800-802, MULTIMET N-155,	UNDER 32	550 - 570	550 - 570	385 - 400	385 - 400
TIMKIN 16-25-6, CARPENTER 22-b3	OVER 32	200 - 225	200 - 225	140 - 160	140 - 160
MONEL					
MONEL-65% NICKEL	-	550 - 570	550 - 570	385 - 400	385 - 400
TITANIUM ALLOYS					
COMMERCIALLY PURE, 6Al-4V,	-	-	-	-	-
ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	-	550 - 570	550 - 570	385 - 400	385 - 400
STAINLESS STEEL (PRECIPITATION)					
12/8, 15/5, 17/4, AM-350/355	UNDER 32	600 - 625	600 - 625	420 - 440	420 - 440
	OVER 32	550 - 570	550 - 570	385 - 400	385 - 400
STAINLESS STEEL (AUSTENITIC)					
200 SERIES, 302, 303, 304, 316	-	600 - 625	600 - 625	420 - 440	420 - 440
STAINLESS STEEL (AUSTENITIC)					
304L, 316L	UNDER 32	600 - 625	600 - 625	420 - 440	420 - 440
	OVER 32	550 - 570	550 - 570	385 - 400	385 - 400
STAINLESS STEEL (MARTENSITIC)					
403, 410, 416, 440	-	600 - 625	600 - 625	420 - 440	420 - 440
HIGH STRENGTH TOOL STEELS					
4140, 4340, 6150, 5210, A2,	UNDER 32	600 - 625	600 - 625	420 - 440	420 - 440
D2, P20, H11, H13, S2, 01	OVER 32	550 - 570	550 - 570	385 - 400	385 - 400
CARBON STEELS					
1000's, 1100's, 1300's	-	800 - 850	800 - 850	560 - 595	560 - 595
DUCTILE					
DUCTILE CAST IRONS	-	800 - 850	800 - 850	560 - 595	560 - 595
CAST IRONS					
GRAY CAST IRONS	-	800 - 850	800 - 850	560 - 595	560 - 595

VI-PRO ENDMILLS - CARBIDE

VI-PRO 5 FLUTE

I.P.T. (Inch Per Tooth)										
MATERIAL / TYPE	1/8"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"
COBALT BASE ALLOYS										
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	.0004 - .0008	.0005 - .0011	.0009 - .0016	.0010 - .0018	.0012 - .0019	.0014 - .0021	.0016 - .0028	.0019 - .0031	.0024 - .0037	.0029 - .0041
NICKEL BASE ALLOYS										
INCONEL-625/718, WASPALLOY, RENE, HASTELLOY	.0004 - .0008	.0005 - .0011	.0009 - .0016	.0010 - .0018	.0012 - .0019	.0014 - .0021	.0016 - .0028	.0019 - .0031	.0024 - .0037	.0029 - .0041
IRON BASE ALLOYS										
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	.0004 - .0008	.0005 - .0011	.0009 - .0016	.0010 - .0018	.0012 - .0019	.0014 - .0021	.0016 - .0028	.0019 - .0031	.0024 - .0037	.0029 - .0041
MONEL										
MONEL-65% NICKEL	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0018 - .0020	.0017 - .0019	.0019 - .0021	.0026 - .0028	.0029 - .0031	.0035 - .0037	.0039 - .0041
TITANIUM ALLOYS										
COMMERCIALLY PURE, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0018 - .0020	.0017 - .0019	.0019 - .0021	.0026 - .0028	.0029 - .0031	.0035 - .0037	.0039 - .0041
STAINLESS STEEL (PRECIPITATION)										
12/8, 15/5, 17/4, AM-350/355	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
STAINLESS STEEL (AUSTENITIC)										
200 SERIES, 302, 303, 304, 316	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
STAINLESS STEEL (AUSTENITIC)										
304L, 316L	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
STAINLESS STEEL (MARTENSITIC)										
403, 410, 416, 440	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
HIGH STRENGTH TOOL STEELS										
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, O1	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
CARBON STEELS										
1000's, 1100's, 1300'S	.0004 - .0008	.0011 - .0013	.0018 - .0020	.0024 - .0026	.0030 - .0032	.0033 - .0035	.0035 - .0037	.0039 - .0041	.0041 - .0043	.0054 - .0056
DUCTILE										
DUCTILE CAST IRONS	.0004 - .0008	.0011 - .0013	.0018 - .0020	.0024 - .0026	.0030 - .0032	.0033 - .0035	.0035 - .0037	.0039 - .0041	.0041 - .0043	.0054 - .0056
CAST IRONS										
GRAY CAST IRONS	.0004 - .0008	.0011 - .0013	.0018 - .0020	.0024 - .0026	.0030 - .0032	.0033 - .0035	.0035 - .0037	.0039 - .0041	.0041 - .0043	.0054 - .0056