

Series VRX

NEW ITEMS HIGH EFFICIENCY MILLING

.0591" - .1181"
(1.500mm - 3.000mm)TECH
PAGES
296-297

TOLERANCES

d_1	+0.000" - .002" (+.000mm - .050mm)
d_2	h6
r	+0.001" - .001" (+.025 - .025mm)

Square End, Corner Radius, Ball End - AlTiN Coated

Ohne Eckenradius, Eckenradius, Vollradius - AlTiN-Beschichtet

Extremo Sin Radio, Ángulo Redondeado, Cabeza Esférica - Recubrimiento de AlTiN

Extrémité Carré, Rayon de Coin, Hemispherique - Revêtement AlTiN

Piatte, Torico, Sferica - Rivestimento in AlTiN

平头, 圆角半径, 球头 - AlTiN 涂层

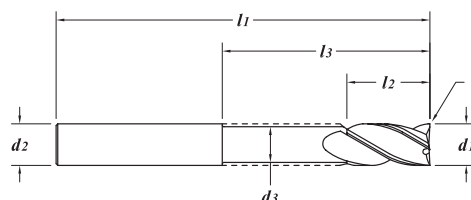


Solid submicron grain carbide end mill - center cutting
Engineered for High Efficiency Milling
Reduces vibration for more aggressive machining resulting in less cycle times and greater productivity

Recommended for stainless steel, inconel, pH materials, titanium and tool steels

Variable flute geometry

The combination of an extended flute length with a weldon flat may cause the flute washout to reach inside some end mill holders



Hochleistungs- Vollhartmetallfräser aus Feinkornhartmetall - Zentrumschnitt
Entwickelt für hocheffizientes Fräsen
Reduziert Vibrationen für eine aggressivere Bearbeitung, um Bearbeitungszeit zu reduzieren und eine grössere Produktivität zu erzielen

Empfohlen für Rostfreien Stahl, Inconel, Pulvermetalle, Titan, und Werkzeugstähle

Variable Spannunt-Geometrie

Die Kombination einer verlängerten Spannuntlänge mit einer Weldon-Spannfläche kann die Ursache bei Spannunt-Auswaschungen bei einigen Frässpantuttern sein



Fresa de submicrograno sólido carburo de alto rendimiento - corte centrado
Diseñado para el fresado de alta eficiencia
Reduce las vibraciones hasta en los más agresivos mecanizados, obteniéndose bajos tiempos de ciclo y mayor productividad

Recomendado para acero inoxidable, inconel, materiales pH, acero laminado en frío, hierro de fundición y aceros herramienta

Geometría variable de ranura de viruta

La combinación de una gran longitud de corte con un mango con plano Weldon puede causar que el labio alcance el interior de algunos portaherramientas



Fraises carbure submicrograin - coupe au centre
Conçu pour un fraisage à haute efficacité
Reduction des vibrations pour un fraisage plus agressif résultant des temps de cycles plus court et une meilleure productivité

Recommandée pour les aciers inoxydables, Inconel, inox pH, aciers a outils, aciers forges, titane, fontes et aciers a outils

Géométrie variable de la helix

La combinaison d'une grande longueur de goujure avec une queue Weldon peut causer des vibrations qui peuvent se prolonger dans le mandrin



Fresa sub-micrograno metallo duro - taglio al centro
Progettato per la fresatura ad alta efficienza
Riduzioni delle vibrazioni per lavorazioni aggressive per ridurre il tempo ciclo ed aumentare la produttività

Raccomandata per lavorazioni su inox, inconel, titanio e acciai per utensili

Geometria ad elica variabile

Estendere la lunghezza del tagliente su un attacco Weldon può causare la rottura dell'utensile in alcune applicazioni



超细晶粒整体硬质合金立铣刀 - 中心切削
高性能铣削的标准
适合更高速, 更大进给的加工, 可以减少振动, 减少加工时间, 提高生产效率

推荐加工 不锈钢、铬镍铁耐热耐腐蚀合金、含磷材质、钛钢 和 工具钢 不等分刃设计

过长的刀刃结合侧固槽的刀具可能会导致刀具夹头受到冲击而损坏

EDP#		d_1 †		d_2	l_1	l_2	r	l_3	d_3
		(plain)	(weldon)						
		Decimal	Metric	Shank Diameter	Overall Length	Flute Length	Corner Radius	Reach Length	Neck Diameter
61084	-	.0591	1.500	3.0	38	3.0	-	-	-
61086	-	.0591	1.500	3.0	38	3.0	0.20	-	-
61088	-	.0591	1.500	3.0	38	3.0	BALL	-	-
61090	-	.0591	1.500	3.0	38	6.0	-	-	-
61092	-	.0591	1.500	3.0	38	6.0	0.20	-	-
61094	-	.0591	1.500	3.0	38	6.0	BALL	-	-
61096	-	.0625	1/16"	1.588	1/8"	1-1/2"	1/8"	-	-
61098	-	.0625	1/16"	1.588	1/8"	1-1/2"	.010"	-	-
61100	-	.0625	1/16"	1.588	1/8"	1-1/2"	BALL	-	-
61102	-	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	-	-
61104	-	.0625	1/16"	1.588	1/8"	1-1/2"	.010"	-	-
61106	-	.0625	1/16"	1.588	1/8"	1-1/2"	BALL	-	-
61108	-	.0787	2.000	3.0	38	4.0	-	-	-
61110	-	.0787	2.000	3.0	38	4.0	0.20	-	-
61112	-	.0787	2.000	3.0	38	4.0	BALL	-	-
61114	-	.0787	2.000	3.0	38	8.0	-	-	-
61116	-	.0787	2.000	3.0	38	8.0	0.20	-	-
61118	-	.0787	2.000	3.0	38	8.0	BALL	-	-
61120	-	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"	-	-
61122	-	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"	.010"	-
61124	-	.0938	3/32"	2.383	1/8"	1-1/2"	BALL	-	-
61126	-	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	-	-
61128	-	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	.010"	-
61130	-	.0938	3/32"	2.383	1/8"	1-1/2"	BALL	-	-
61877	-	.1181	3.000	3.0	38	8	-	-	-
27420	-	.1181	3.000	3.0	50	8	0.20	-	-
61132	-	.1181	3.000	3.0	50	8	0.30	-	-
27425	-	.1181	3.000	3.0	50	8	0.50	-	-
61134	-	.1181	3.000	3.0	50	8	BALL	-	-
61887	-	.1181	3.000	3.0	38	12	-	-	-
27430	-	.1181	3.000	3.0	50	12	0.20	-	-
61136	-	.1181	3.000	3.0	50	12	0.30	-	-
27435	-	.1181	3.000	3.0	50	12	0.50	-	-
61138	-	.1181	3.000	3.0	50	12	BALL	-	-

EDP#		$d1$ †			$d2$	$l1$	$l2$	r	$l3$	$d3$
(plain)	(weldon)	Decimal	Diameter	Metric	Shank Diameter	Overall Length	Flute Length	Corner Radius	Reach Length	Neck Diameter
61917	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	-	-	-
27440	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.010"	-	-
61140	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.015"	-	-
61073	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.030"	-	-
61142	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	BALL	-	-
61144	-	.1250	1/8"	3.175	1/8"	1-1/2"	3/8"	-	-	-
61146	-	.1250	1/8"	3.175	1/8"	1-1/2"	3/8"	.010"	-	-
61148	-	.1250	1/8"	3.175	1/8"	1-1/2"	3/8"	.015"	-	-
61074	-	.1250	1/8"	3.175	1/8"	1-1/2"	3/8"	.030"	-	-
61149	-	.1250	1/8"	3.175	1/8"	1-1/2"	3/8"	BALL	-	-
61927	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	-	-	-
27450	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.010"	-	-
61150	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.015"	-	-
27455	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.020"	-	-
61075	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.030"	-	-
61152	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	BALL	-	-
61154	-	.1562	5/32"	3.967	3/16"	2"	5/16"	-	-	-
27460	-	.1562	5/32"	3.967	3/16"	2"	5/16"	.010"	-	-
61156	-	.1562	5/32"	3.967	3/16"	2"	5/16"	.015"	-	-
61076	-	.1562	5/32"	3.967	3/16"	2"	5/16"	.030"	-	-
61077	-	.1562	5/32"	3.967	3/16"	2"	5/16"	BALL	-	-
61158	-	.1562	5/32"	3.967	3/16"	2"	1/2"	-	-	-
27470	-	.1562	5/32"	3.967	3/16"	2"	1/2"	.010"	-	-
61160	-	.1562	5/32"	3.967	3/16"	2"	1/2"	.015"	-	-
61078	-	.1562	5/32"	3.967	3/16"	2"	1/2"	.030"	-	-
61079	-	.1562	5/32"	3.967	3/16"	2"	1/2"	BALL	-	-
61162	-	.1575		4.000	6.0	50	8	-	-	-
27480	-	.1575		4.000	6.0	50	8	0.30	-	-
61164	-	.1575		4.000	6.0	50	8	0.50	-	-
28470	-	.1575		4.000	6.0	50	8	BALL	-	-
61977	-	.1575		4.000	6.0	50	12	-	-	-
27490	-	.1575		4.000	6.0	50	12	0.30	-	-
27495	-	.1575		4.000	6.0	50	12	0.50	-	-
28480	-	.1575		4.000	6.0	50	12	BALL	-	-
61166	-	.1575		4.000	6.0	65	19	-	-	-
61168	-	.1575		4.000	6.0	65	19	0.30	-	-
62007	-	.1875	3/16"	4.763	3/16"	2"	5/16"	-	-	-
27500	-	.1875	3/16"	4.763	3/16"	2"	5/16"	.010"	-	-
61170	-	.1875	3/16"	4.763	3/16"	2"	5/16"	.015"	-	-
61172	-	.1875	3/16"	4.763	3/16"	2"	5/16"	.020"	-	-
28490	-	.1875	3/16"	4.763	3/16"	2"	5/16"	BALL	-	-
61174	-	.1875	3/16"	4.763	3/16"	2"	7/16"	-	-	-
61176	-	.1875	3/16"	4.763	3/16"	2"	7/16"	.010"	-	-
61178	-	.1875	3/16"	4.763	3/16"	2"	7/16"	.015"	-	-
62017	-	.1875	3/16"	4.763	3/16"	2"	9/16"	-	-	-
27520	-	.1875	3/16"	4.763	3/16"	2"	9/16"	.010"	-	-
61180	-	.1875	3/16"	4.763	3/16"	2"	9/16"	.015"	-	-
27521	-	.1875	3/16"	4.763	3/16"	2"	9/16"	.020"	-	-
61182	-	.1875	3/16"	4.763	3/16"	2"	9/16"	.030"	-	-
28500	-	.1875	3/16"	4.763	3/16"	2"	9/16"	BALL	-	-
61184	-	.1875	3/16"	4.763	3/16"	3"	1"	.010"	-	-
61186	-	.1875	3/16"	4.763	3/16"	3"	1-1/4"	.010"	-	-
63100	-	.1875	3/16"	4.763	3/16"	4"	5/16"	.010"	-	-
61188	-	.1969		5.000	6.0	50	10	-	-	-
27522	-	.1969		5.000	6.0	50	10	0.30	-	-
61190	-	.1969		5.000	6.0	50	10	0.50	-	-
28510	-	.1969		5.000	6.0	50	10	BALL	-	-

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MATERIAL HARDNESS (Rc)

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continued →

Series VRX (continued)

.1969" - .2500"
(5.000mm - 6.350mm)

HIGH PERFORMANCE
END MILLS

EDP#		$d1$ † Diameter		$d2$ Shank Diameter	$l1$ Overall Length	$l2$ Flute Length	r Corner Radius	$l3$ Reach Length	$d3$ Neck Diameter
(plain)	(weldon)	Decimal	Metric						
62057	-	.1969	5.000	6.0	65	15	-	-	-
27524	-	.1969	5.000	6.0	65	15	0.30	-	-
27526	-	.1969	5.000	6.0	65	15	0.50	-	-
27528	-	.1969	5.000	6.0	65	15	1.00	-	-
28520	-	.1969	5.000	6.0	65	15	BALL	-	-
63110	-	.1969	5.000	6.0	100	10	0.30	-	-
61192	-	.1969	5.000	6.0	100	10	0.30	55	4.70
61194	-	.2188	7/32"	1/4"	2"	3/8"	-	-	-
61196	-	.2188	7/32"	1/4"	2"	3/8"	.010"	-	-
27525	-	.2188	7/32"	1/4"	2"	3/8"	.015"	-	-
61198	-	.2188	7/32"	1/4"	2"	3/8"	BALL	-	-
61200	-	.2188	7/32"	1/4"	2-1/2"	3/4"	-	-	-
61202	-	.2188	7/32"	1/4"	2-1/2"	3/4"	.010"	-	-
27530	-	.2188	7/32"	1/4"	2-1/2"	3/4"	.015"	-	-
61204	-	.2188	7/32"	1/4"	2-1/2"	3/4"	.020"	-	-
61206	-	.2188	7/32"	1/4"	2-1/2"	3/4"	BALL	-	-
61208	-	.2188	7/32"	1/4"	3"	1-1/4"	.015"	-	-
63120	-	.2188	7/32"	1/4"	4"	3/8"	.015"	-	-
61210	-	.2188	7/32"	1/4"	4"	3/8"	.015"	2-1/4"	.205"
62077	-	.2362	6.000	6.0	50	12	-	-	-
27535	-	.2362	6.000	6.0	50	12	0.30	-	-
61212	-	.2362	6.000	6.0	50	12	0.50	-	-
61214	-	.2362	6.000	6.0	50	12	0.75	-	-
28530	-	.2362	6.000	6.0	50	12	BALL	-	-
62087	-	.2362	6.000	6.0	65	19	-	-	-
61216	-	.2362	6.000	6.0	65	19	0.20	-	-
27540	-	.2362	6.000	6.0	65	19	0.30	-	-
27545	-	.2362	6.000	6.0	65	19	0.50	-	-
61218	-	.2362	6.000	6.0	65	19	0.75	-	-
27547	-	.2362	6.000	6.0	65	19	1.00	-	-
27548	-	.2362	6.000	6.0	65	19	1.50	-	-
28540	-	.2362	6.000	6.0	65	19	BALL	-	-
61220	-	.2362	6.000	6.0	75	26	0.30	-	-
61222	-	.2362	6.000	6.0	75	26	0.50	-	-
61224	-	.2362	6.000	6.0	75	38	0.30	-	-
61226	-	.2362	6.000	6.0	75	38	0.50	-	-
63130	-	.2362	6.000	6.0	100	12	0.30	32	5.70
62137	-	.2500	1/4"	6.350	1/4"	2"	3/8"	-	-
61228	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.010"	-
27560	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.015"	-
61230	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.020"	-
28570	-	.2500	1/4"	6.350	1/4"	2"	3/8"	BALL	-
61232	-	.2500	1/4"	6.350	1/4"	2"	1/2"	-	-
61234	-	.2500	1/4"	6.350	1/4"	2"	1/2"	.015"	-
62147	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	-	-
27570	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.010"	-
27580	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	-
61236	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	-
27581	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.030"	-
61238	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.040"	-
27583	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.060"	-
28580	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	BALL	-

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MATERIAL HARDNESS (Rc)

EDP#		$d1^{\dagger}$			$d2$	$l1$	$l2$	r	$l3$	$d3$
		Decimal	Diameter	Metric						
61240	-	.2500	1/4"	6.350	1/4"	3"	1"	.015"	-	-
61241	-	.2500	1/4"	6.350	1/4"	3"	1-1/8"	.030"	-	-
61242	-	.2500	1/4"	6.350	1/4"	3"	1-1/2"	.015"	-	-
61244	-	.2500	1/4"	6.350	1/4"	4"	3/8"	.015"	3/4"	.240"
63140	-	.2500	1/4"	6.350	1/4"	4"	3/8"	.015"	1-1/4"	.240"
61246	-	.2500	1/4"	6.350	1/4"	4"	3/8"	.015"	2-1/8"	.240"
27585	-	.2756		7.000	8.0	50	12	0.30	-	-
27590	-	.2756		7.000	8.0	65	22	0.30	-	-
61248	-	.2812	9/32"	7.142	5/16"	2"	7/16"	-	-	-
27595	-	.2812	9/32"	7.142	5/16"	2"	7/16"	.015"	-	-
61250	-	.2812	9/32"	7.142	5/16"	2-1/2"	13/16"	-	-	-
61252	-	.2812	9/32"	7.142	5/16"	2-1/2"	13/16"	.010"	-	-
27597	-	.2812	9/32"	7.142	5/16"	2-1/2"	13/16"	.015"	-	-
61254	-	.2812	9/32"	7.142	5/16"	2-1/2"	13/16"	.020"	-	-
63150	-	.2812	9/32"	7.142	5/16"	4"	7/16"	.015"	-	-
62207	-	.3125	5/16"	7.938	5/16"	2"	7/16"	-	-	-
61256	-	.3125	5/16"	7.938	5/16"	2"	7/16"	.010"	-	-
61258	-	.3125	5/16"	7.938	5/16"	2"	7/16"	.015"	-	-
27600	-	.3125	5/16"	7.938	5/16"	2"	7/16"	.020"	-	-
61260	-	.3125	5/16"	7.938	5/16"	2"	7/16"	.030"	-	-
28610	-	.3125	5/16"	7.938	5/16"	2"	7/16"	BALL	-	-
62217	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	-	-	-
27610	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.010"	-	-
61262	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.015"	-	-
27620	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.020"	-	-
27622	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.030"	-	-
61264	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.040"	-	-
27624	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.060"	-	-
28620	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	BALL	-	-
61266	-	.3125	5/16"	7.938	5/16"	3"	1-1/4"	.015"	-	-
63160	-	.3125	5/16"	7.938	5/16"	4"	7/16"	.020"	1-7/8"	.300"
62257	-	.3150		8.000	8.0	50	12	-	-	-
61268	-	.3150		8.000	8.0	50	12	0.30	-	-
27630	-	.3150		8.000	8.0	50	12	0.50	-	-
61270	-	.3150		8.000	8.0	50	12	0.75	-	-
28630	-	.3150		8.000	8.0	50	12	BALL	-	-
62267	-	.3150		8.000	8.0	65	22	-	-	-
27635	-	.3150		8.000	8.0	65	22	0.30	-	-
27640	-	.3150		8.000	8.0	65	22	0.50	-	-
61272	-	.3150		8.000	8.0	65	22	0.75	-	-
27642	-	.3150		8.000	8.0	65	22	1.00	-	-
27643	-	.3150		8.000	8.0	65	22	1.50	-	-
61274	-	.3150		8.000	8.0	65	22	2.00	-	-
28640	-	.3150		8.000	8.0	65	22	BALL	-	-
61276	-	.3150		8.000	8.0	75	38	0.50	-	-
61278	-	.3150		8.000	8.0	100	50	0.50	-	-
63170	-	.3150		8.000	8.0	100	12	0.50	47	7.60
61280	-	.3438	11/32"	8.733	3/8"	2"	1/2"	-	-	-
27645	-	.3438	11/32"	8.733	3/8"	2"	1/2"	.020"	-	-
61282	-	.3438	11/32"	8.733	3/8"	2-1/2"	7/8"	-	-	-
27650	-	.3438	11/32"	8.733	3/8"	2-1/2"	7/8"	.020"	-	-
61284	-	.3438	11/32"	8.733	3/8"	3"	1-1/4"	.015"	-	-

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MATERIAL HARDNESS (Rc)

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continued →

HIGH EFFICIENCY MILLING



TECH
PAGES
296-297

TOLERANCES

d_1	+0.000" - .002" (+.000mm - .050mm)
d_2	h6
r	+0.001" - .001" (+.025 - .025mm)

Square End, Corner Radius, Ball End - AlTiN Coated

Ohne Eckenradius, Eckenradius, Vollradius - AlTiN-Beschichtet

Extremo Sin Radio, Ángulo Redondeado, Cabeza Esférica - Recubrimiento de AlTiN

Extrémité Carré, Rayon de Coin, Hemispherique - Revêtement AlTiN

Piatte, Torico, Sferica - Rivestimento in AlTiN

平头, 圆角半径, 球头 - AlTiN 涂层



EDP#		d_1 †		d_2	l_1	l_2	r	l_3	d_3
		Decimal	Metric	Shank Diameter	Overall Length	Flute Length	Corner Radius	Reach Length	Neck Diameter
63180	(plain)	.3438	11/32"	8.733	3/8"	4"	1/2"	.020"	-
27655	(weldon)	.3543	9.000	10.0	50	14	0.50	-	-
62287	-	.3543	9.000	10.0	65	22	-	-	-
27657	-	.3543	9.000	10.0	65	22	0.50	-	-
62317	-	.3750	3/8"	9.525	3/8"	2"	1/2"	-	-
27658	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.010"	-
61286	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.015"	-
27660	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.020"	-
27662	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.030"	-
61288	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.060"	-
28670	-	.3750	3/8"	9.525	3/8"	2"	1/2"	BALL	-
62327	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	-	-
27670	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.010"	-
61290	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.015"	-
27680	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.020"	-
27682	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.030"	-
61292	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.040"	-
61294	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.050"	-
27684	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.060"	-
61296	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.094"	-
28680	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	BALL	-
61298	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.015"	-
61299	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.030"	-
61300	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	.015"	-
61302	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	BALL	-
61304	-	.3750	3/8"	9.525	3/8"	4"	2"	.015"	-
61306	-	.3750	3/8"	9.525	3/8"	4"	1/2"	.015"	1-1/8"
63190	-	.3750	3/8"	9.525	3/8"	4"	1/2"	.020"	1-7/8"
61308	-	.3750	3/8"	9.525	3/8"	4"	1/2"	.015"	2-1/8"
61310	-	.3750	3/8"	9.525	3/8"	6"	1/2"	.015"	3-1/8"
61312	-	.3937	10.000	10.0	50	16	-	-	-
27690	-	.3937	10.000	10.0	50	16	0.50	-	-
61314	-	.3937	10.000	10.0	50	16	1.00	-	-
28690	-	.3937	10.000	10.0	50	16	BALL	-	-
62397	-	.3937	10.000	10.0	70	22	-	-	-
27698	-	.3937	10.000	10.0	70	22	0.30	-	-
27700	-	.3937	10.000	10.0	70	22	0.50	-	-
61316	-	.3937	10.000	10.0	70	22	0.75	-	-
27702	-	.3937	10.000	10.0	70	22	1.00	-	-
28700	-	.3937	10.000	10.0	70	22	BALL	-	-
61318	-	.3937	10.000	10.0	70	32	0.50	-	-
61320	-	.3937	10.000	10.0	100	38	0.50	-	-
61322	-	.3937	10.000	10.0	100	50	0.50	-	-
63200	-	.3937	10.000	10.0	100	14	0.50	47	9.50

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MATERIAL HARDNESS (Rc)

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EDP#		$d1^{\dagger}$			$d2$	$l1$	$l2$	r	$l3$	$d3$
(plain)	(weldon)	Decimal	Diameter	Metric	Shank Diameter	Overall Length	Flute Length	Corner Radius	Reach Length	Neck Diameter
27705	-	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.020"	-	-
28705	-	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	BALL	-	-
62437	-	.4375	7/16"	11.113	7/16"	2-3/4"	7/8"	-	-	-
27708	-	.4375	7/16"	11.113	7/16"	2-3/4"	7/8"	.010"	-	-
27710	-	.4375	7/16"	11.113	7/16"	2-3/4"	7/8"	.020"	-	-
28710	-	.4375	7/16"	11.113	7/16"	2-3/4"	7/8"	BALL	-	-
63210	-	.4375	7/16"	11.113	7/16"	6"	1"	.020"	-	-
62475	-	.4724		12.000	12.0	65	19	-	-	-
27712	-	.4724		12.000	12.0	65	19	0.30	-	-
27715	-	.4724		12.000	12.0	65	19	0.50	-	-
28715	-	.4724		12.000	12.0	65	19	BALL	-	-
61324	-	.4724		12.000	12.0	75	26	-	-	-
61326	-	.4724		12.000	12.0	75	26	0.50	-	-
62485	-	.4724		12.000	12.0	75	32	-	-	-
27718	-	.4724		12.000	12.0	75	32	0.30	-	-
27720	-	.4724		12.000	12.0	75	32	0.50	-	-
61328	-	.4724		12.000	12.0	75	32	0.75	-	-
27722	-	.4724		12.000	12.0	75	32	1.00	-	-
27730	-	.4724		12.000	12.0	75	32	1.50	-	-
27735	-	.4724		12.000	12.0	75	32	2.00	-	-
61330	-	.4724		12.000	12.0	75	32	3.00	-	-
28720	-	.4724		12.000	12.0	75	32	BALL	-	-
61332	-	.4724		12.000	12.0	100	38	-	-	-
61334	-	.4724		12.000	12.0	100	38	0.50	-	-
61336	-	.4724		12.000	12.0	100	42	-	-	-
61338	-	.4724		12.000	12.0	100	42	0.50	-	-
61340	-	.4724		12.000	12.0	100	52	-	-	-
61342	-	.4724		12.000	12.0	100	52	0.50	-	-
63220	-	.4724		12.000	12.0	150	19	0.50	57	11.50
62525	62527	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	-	-	-
27739	27738	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.010"	-	-
61344	-	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.015"	-	-
27741	27740	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.020"	-	-
27743	27742	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.030"	-	-
61346	-	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.060"	-	-
28751	28750	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	BALL	-	-
61348	-	.5000	1/2"	12.700	1/2"	3"	1"	-	-	-
61350	-	.5000	1/2"	12.700	1/2"	3"	1"	.015"	-	-
61352	-	.5000	1/2"	12.700	1/2"	3"	1"	.030"	-	-
61354	-	.5000	1/2"	12.700	1/2"	3"	1"	.060"	-	-
61356	-	.5000	1/2"	12.700	1/2"	3"	1"	.125"	-	-
61358	-	.5000	1/2"	12.700	1/2"	3"	1"	BALL	-	-
62535	62537	.5000	1/2"	12.700	1/2"	3"	1-1/4"	-	-	-
27751	27750	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.010"	-	-
61360	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.015"	-	-
27761	27760	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.020"	-	-
27763	27762	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-
61362	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.040"	-	-
61364	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.050"	-	-
27767	27764	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.060"	-	-
61366	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.078"	-	-
63398	63399	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.090"	-	-

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MATERIAL HARDNESS (Rc)

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continued →

Series VRX (continued)

.5000" - .6250"
(12.700mm - 15.875mm)

HIGH PERFORMANCE
END MILLS

EDP#		$d1$ †			$d2$	$l1$	$l2$	r	$l3$	$d3$
(plain)	(weldon)	Decimal	Diameter	Metric	Shank Diameter	Overall Length	Flute Length	Corner Radius	Reach Length	Neck Diameter
61368	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.094"	-	-
61370	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.100"	-	-
27769	27768	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.120"	-	-
61372	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.125"	-	-
28761	28760	.5000	1/2"	12.700	1/2"	3"	1-1/4"	BALL	-	-
28771	28770	.5000	1/2"	12.700	1/2"	4"	5/8"	BALL	-	-
61374	-	.5000	1/2"	12.700	1/2"	4"	1-1/2"	-	-	-
63401	63400	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.010"	-	-
61376	-	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.015"	-	-
63411	63410	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.030"	-	-
63421	63420	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.060"	-	-
63424	-	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.125"	-	-
61378	-	.5000	1/2"	12.700	1/2"	4"	1-1/2"	BALL	-	-
61380	-	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.015"	-	-
61382	-	.5000	1/2"	12.700	1/2"	4"	1-3/4"	.015"	-	-
62565	62567	.5000	1/2"	12.700	1/2"	4"	2"	-	-	-
63431	63430	.5000	1/2"	12.700	1/2"	4"	2"	.010"	-	-
61384	-	.5000	1/2"	12.700	1/2"	4"	2"	.015"	-	-
63441	63440	.5000	1/2"	12.700	1/2"	4"	2"	.030"	-	-
63451	63450	.5000	1/2"	12.700	1/2"	4"	2"	.060"	-	-
61386	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.015"	-	-
63241	63240	.5000	1/2"	12.700	1/2"	6"	2"	.020"	-	-
61388	-	.5000	1/2"	12.700	1/2"	6"	2-1/2"	.015"	-	-
61390	-	.5000	1/2"	12.700	1/2"	6"	2-1/2"	.030"	-	-
61392	-	.5000	1/2"	12.700	1/2"	6"	3-1/4"	.030"	-	-
61394	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.015"	1-1/2"	.480"
61396	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.015"	2-1/4"	.480"
63231	63230	.5000	1/2"	12.700	1/2"	4"	5/8"	.020"	2-1/4"	.480"
61398	-	.5000	1/2"	12.700	1/2"	6"	5/8"	.015"	3-3/8"	.480"
61400	-	.5000	1/2"	12.700	1/2"	6"	5/8"	.015"	4-1/8"	.480"
27766	27765	.5512		14.000	14.0	75	19	0.50	-	-
28781	28780	.5512		14.000	14.0	75	19	BALL	-	-
27771	27770	.5512		14.000	14.0	88	32	0.50	-	-
28786	28785	.5512		14.000	14.0	88	32	BALL	-	-
63261	63260	.5512		14.000	14.0	150	50	0.50	-	-
63251	-	.5512		14.000	14.0	150	19	0.50	57	13.50
62625	62627	.5625	9/16"	14.288	9/16"	3-1/2"	1-1/4"	-	-	-
61402	-	.6250	5/8"	15.875	5/8"	3"	3/4"	-	-	-
63461	63460	.6250	5/8"	15.875	5/8"	3"	3/4"	.010"	-	-
61404	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.015"	-	-
27781	27780	.6250	5/8"	15.875	5/8"	3"	3/4"	.025"	-	-
61406	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.060"	-	-
28796	28795	.6250	5/8"	15.875	5/8"	3"	3/4"	BALL	-	-
62655	62657	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	-	-	-
27791	27790	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.010"	-	-
61408	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.015"	-	-
61410	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.020"	-	-
27801	27800	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.025"	-	-
61412	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.030"	-	-
61414	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.040"	-	-
27803	27802	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.060"	-	-
61416	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.078"	-	-
61418	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.094"	-	-
27805	27804	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.120"	-	-
61420	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.125"	-	-
28801	28800	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	BALL	-	-

EDP#		$d1$ †			$d2$	$l1$	$l2$	r	$l3$	$d3$
(plain)	(weldon)	Decimal	Diameter	Metric	Shank Diameter	Overall Length	Flute Length	Corner Radius	Reach Length	Neck Diameter
61422	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	-	-	-
63501	63500	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.010"	-	-
61424	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.015"	-	-
63511	63510	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.030"	-	-
63521	63520	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.060"	-	-
61426	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	-	-	-
61428	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.015"	-	-
61430	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.030"	-	-
61432	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.060"	-	-
62675	62677	.6250	5/8"	15.875	5/8"	4"	1-3/4"	-	-	-
63531	63530	.6250	5/8"	15.875	5/8"	4"	1-3/4"	.010"	-	-
63541	63540	.6250	5/8"	15.875	5/8"	4"	1-3/4"	.030"	-	-
63551	63550	.6250	5/8"	15.875	5/8"	4"	1-3/4"	.060"	-	-
63281	63280	.6250	5/8"	15.875	5/8"	6"	2"	.025"	-	-
63283	-	.6250	5/8"	15.875	5/8"	6"	2"	.090"	-	-
63285	-	.6250	5/8"	15.875	5/8"	6"	2"	.125"	-	-
28806	28805	.6250	5/8"	15.875	5/8"	6"	2"	BALL	-	-
61434	-	.6250	5/8"	15.875	5/8"	6"	2-1/2"	.030"	-	-
61436	-	.6250	5/8"	15.875	5/8"	6"	3-1/4"	.030"	-	-
61438	-	.6250	5/8"	15.875	5/8"	4"	3/4"	.030"	1-5/8"	.600"
61440	-	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	2-3/8"	.600"
63271	63270	.6250	5/8"	15.875	5/8"	6"	3/4"	.025"	3-1/4"	.600"
61442	-	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	4-1/8"	.600"
61444	-	.6299		16.000	16.0	75	19	-	-	-
27809	-	.6299		16.000	16.0	75	19	0.30	-	-
27811	27810	.6299		16.000	16.0	75	19	0.50	-	-
61446	-	.6299		16.000	16.0	75	19	1.00	-	-
28811	28810	.6299		16.000	16.0	75	19	BALL	-	-
62715	62717	.6299		16.000	16.0	88	32	-	-	-
27819	27818	.6299		16.000	16.0	88	32	0.30	-	-
27821	27820	.6299		16.000	16.0	88	32	0.50	-	-
61448	-	.6299		16.000	16.0	88	32	0.75	-	-
27823	27822	.6299		16.000	16.0	88	32	1.00	-	-
61450	-	.6299		16.000	16.0	88	32	1.50	-	-
27825	27824	.6299		16.000	16.0	88	32	2.00	-	-
61452	-	.6299		16.000	16.0	88	32	3.00	-	-
28821	28820	.6299		16.000	16.0	88	32	BALL	-	-
63581	63580	.6299		16.000	16.0	100	38	0.30	-	-
61454	-	.6299		16.000	16.0	100	38	0.50	-	-
61456	-	.6299		16.000	16.0	100	42	0.50	-	-
63291	63290	.6299		16.000	16.0	150	19	0.50	82	15.25
27831	-	.7087		18.000	18.0	75	22	0.80	-	-
28831	-	.7087		18.000	18.0	75	22	BALL	-	-
27836	27835	.7087		18.000	18.0	100	38	0.80	-	-
28836	28835	.7087		18.000	18.0	100	38	BALL	-	-
63301	-	.7087		18.000	18.0	150	25	0.80	82	17.25
61458	-	.7500	3/4"	19.050	3/4"	3"	7/8"	-	-	-
27841	27840	.7500	3/4"	19.050	3/4"	3"	7/8"	.030"	-	-
61460	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.060"	-	-
28841	28840	.7500	3/4"	19.050	3/4"	3"	7/8"	BALL	-	-
61462	-	.7500	3/4"	19.050	3/4"	4"	1-1/4"	-	-	-
61464	-	.7500	3/4"	19.050	3/4"	4"	1-1/4"	.030"	-	-
62775	62777	.7500	3/4"	19.050	3/4"	4"	1-1/2"	-	-	-
27851	27850	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.015"	-	-
27861	27860	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.030"	-	-
27865	27864	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.060"	-	-
27867	27866	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.120"	-	-
28861	28860	.7500	3/4"	19.050	3/4"	4"	1-1/2"	BALL	-	-

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MATERIAL HARDNESS (Rc)

0

continued →

Series VRX (continued)

.7500" - .8661"
(19.050mm - 22.000mm)

HIGH PERFORMANCE
END MILLS

EDP#		$d1^{\dagger}$			$d2$	$l1$	$l2$	r	$l3$	$d3$
(plain)	(weldon)	Decimal	Diameter	Metric	Shank Diameter	Overall Length	Flute Length	Corner Radius	Reach Length	Neck Diameter
61466	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	-	-	-
61468	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.015"	-	-
61470	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.030"	-	-
61472	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.060"	-	-
61474	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	BALL	-	-
62785	62787	.7500	3/4"	19.050	3/4"	4"	1-3/4"	-	-	-
63601	63600	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.015"	-	-
27869	27868	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.030"	-	-
63611	63610	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.060"	-	-
61476	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.094"	-	-
63621	63620	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.120"	-	-
61478	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.190"	-	-
61480	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	BALL	-	-
62795	62797	.7500	3/4"	19.050	3/4"	5"	2"	-	-	-
63631	63630	.7500	3/4"	19.050	3/4"	5"	2"	.015"	-	-
63311	63310	.7500	3/4"	19.050	3/4"	5"	2"	.030"	-	-
63641	63640	.7500	3/4"	19.050	3/4"	5"	2"	.060"	-	-
61482	-	.7500	3/4"	19.050	3/4"	5"	2"	.094"	-	-
61484	-	.7500	3/4"	19.050	3/4"	5"	2"	.125"	-	-
28866	28865	.7500	3/4"	19.050	3/4"	5"	2"	BALL	-	-
61486	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	-	-	-
61488	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.030"	-	-
62805	62807	.7500	3/4"	19.050	3/4"	6"	3"	-	-	-
63651	63650	.7500	3/4"	19.050	3/4"	6"	3"	.015"	-	-
63661	63660	.7500	3/4"	19.050	3/4"	6"	3"	.030"	-	-
63671	63670	.7500	3/4"	19.050	3/4"	6"	3"	.060"	-	-
61490	-	.7500	3/4"	19.050	3/4"	6"	3-1/4"	-	-	-
61492	-	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.030"	-	-
61494	-	.7500	3/4"	19.050	3/4"	7"	4-1/4"	-	-	-
61496	-	.7500	3/4"	19.050	3/4"	7"	4-1/4"	.030"	-	-
63321	63320	.7500	3/4"	19.050	3/4"	6"	1"	.030"	3-1/4"	.730"
63323	-	.7500	3/4"	19.050	3/4"	6"	1"	.060"	3-1/4"	.730"
63325	-	.7500	3/4"	19.050	3/4"	6"	1"	.090"	3-1/4"	.730"
63327	-	.7500	3/4"	19.050	3/4"	6"	1"	.125"	3-1/4"	.730"
NEW 63329	-	.7500	3/4"	19.050	3/4"	6"	1"	.190"	3-1/4"	.730"
61498	-	.7874		20.000	20.0	75	22	-	-	-
61500	-	.7874		20.000	20.0	75	22	0.50	-	-
27871	27870	.7874		20.000	20.0	75	22	1.00	-	-
28871	28870	.7874		20.000	20.0	75	22	BALL	-	-
62825	62827	.7874		20.000	20.0	100	38	-	-	-
27879	27878	.7874		20.000	20.0	100	38	0.50	-	-
61502	-	.7874		20.000	20.0	100	38	0.75	-	-
27881	27880	.7874		20.000	20.0	100	38	1.00	-	-
27891	27890	.7874		20.000	20.0	100	38	1.50	-	-
61504	-	.7874		20.000	20.0	100	38	3.00	-	-
28881	28880	.7874		20.000	20.0	100	38	BALL	-	-
61506	-	.7874		20.000	20.0	100	42	0.50	-	-
61508	-	.7874		20.000	20.0	125	52	0.50	-	-
63331	63330	.7874		20.000	20.0	150	25	1.00	82	19.30
27911	-	.8661		22.000	22.0	100	38	1.00	-	-

MATERIAL HARDNESS (Rc)

	EDP#		d_1 †		d_2	l_1	l_2	r	l_3	d_3
	(plain)	(weldon)	Decimal	Diameter	Shank Diameter	Overall Length	Flute Length	Corner Radius	Reach Length	Neck Diameter
NEW	61510	-	.9843	25.000	25.0	100	26	-	-	-
	61512	-	.9843	25.000	25.0	100	26	0.50	-	-
	62855	62857	.9843	25.000	25.0	100	38	-	-	-
	61514	-	.9843	25.000	25.0	100	38	0.50	-	-
NEW	27941	27940	.9843	25.000	25.0	100	38	1.00	-	-
	27951	-	.9843	25.000	25.0	100	38	1.50	-	-
	61516	-	.9843	25.000	25.0	100	38	3.00	-	-
	28901	28900	.9843	25.000	25.0	100	38	BALL	-	-
NEW	61518	-	.9843	25.000	25.0	100	42	-	-	-
	61520	-	.9843	25.000	25.0	100	42	0.50	-	-
	61522	-	.9843	25.000	25.0	125	50	0.50	-	-
	63351	63350	.9843	25.000	25.0	125	50	1.00	-	-
	63361	63360	.9843	25.000	25.0	150	32	1.00	82	24.40
	61524	-	1.000	1"	25.400	1"	4"	1"	-	-
	27959	27958	1.000	1"	25.400	1"	4"	1"	.015"	-
	27961	27960	1.000	1"	25.400	1"	4"	1"	.035"	-
	-	27962	1.000	1"	25.400	1"	4"	1"	.060"	-
	28911	28910	1.000	1"	25.400	1"	4"	1"	BALL	-
	62885	62887	1.000	1"	25.400	1"	4"	1-1/2"	-	-
	27967	27966	1.000	1"	25.400	1"	4"	1-1/2"	.015"	-
	61526	-	1.000	1"	25.400	1"	4"	1-1/2"	.025"	-
	27971	27970	1.000	1"	25.400	1"	4"	1-1/2"	.035"	-
	27981	27980	1.000	1"	25.400	1"	4"	1-1/2"	.060"	-
	27991	-	1.000	1"	25.400	1"	4"	1-1/2"	.090"	-
	61528	-	1.000	1"	25.400	1"	4"	1-1/2"	.125"	-
	61530	-	1.000	1"	25.400	1"	4"	1-1/2"	.190"	-
	61532	-	1.000	1"	25.400	1"	4"	1-1/2"	.250"	-
	28916	28915	1.000	1"	25.400	1"	4"	1-1/2"	BALL	-
	61534	-	1.000	1"	25.400	1"	4"	1-5/8"	.030"	-
	62895	62897	1.000	1"	25.400	1"	4"	1-3/4"	-	-
	28001	28000	1.000	1"	25.400	1"	4"	1-3/4"	.015"	-
	61536	-	1.000	1"	25.400	1"	4"	1-3/4"	.030"	-
	28011	28012	1.000	1"	25.400	1"	4"	1-3/4"	.060"	-
	28021	-	1.000	1"	25.400	1"	4"	1-3/4"	.090"	-
	61538	-	1.000	1"	25.400	1"	4"	1-3/4"	.125"	-
	61540	-	1.000	1"	25.400	1"	4"	1-3/4"	.190"	-
NEW	61542	-	1.000	1"	25.400	1"	4"	1-3/4"	.250"	-
NEW	62905	62907	1.000	1"	25.400	1"	5"	2"	-	-
	63369	63368	1.000	1"	25.400	1"	5"	2"	.015"	-
	63371	63370	1.000	1"	25.400	1"	5"	2"	.035"	-
	63373	63372	1.000	1"	25.400	1"	5"	2"	.060"	-
	63375	63374	1.000	1"	25.400	1"	5"	2"	.090"	-
	61544	-	1.000	1"	25.400	1"	5"	2"	.125"	-
	61546	-	1.000	1"	25.400	1"	5"	2"	.250"	-
	28931	28930	1.000	1"	25.400	1"	5"	2"	BALL	-
	61548	-	1.000	1"	25.400	1"	5"	2-1/2"	-	-
	61550	-	1.000	1"	25.400	1"	5"	2-1/2"	.030"	-
	62915	62917	1.000	1"	25.400	1"	6"	3"	-	-
	61552	-	1.000	1"	25.400	1"	6"	3-1/4"	.030"	-
	61554	-	1.000	1"	25.400	1"	7"	4-1/4"	.030"	-
	61556	-	1.000	1"	25.400	1"	7"	4-1/4"	.060"	-
	61558	-	1.000	1"	25.400	1"	6"	1-1/4"	.030"	2-5/8"
	63381	63380	1.000	1"	25.400	1"	6"	1-1/4"	.035"	3-1/4"
NEW	61560	-	1.000	1"	25.400	1"	6"	1-1/4"	.060"	3-1/4"
NEW	61562	-	1.000	1"	25.400	1"	7"	1-1/4"	.030"	4-1/4"

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MATERIAL HARDNESS (Rc)

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VAN CUTSEM tools
Quality tools for metalworking

GARR TOOL High Performance Milling Guide for VRX

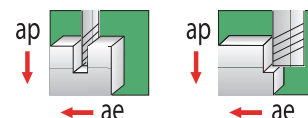
(High Efficiency Milling)

NOTE - DATA DOES NOT REFLECT CHIP THINNING. SEE GARR TOOL'S NEW CALCULATOR ON OUR WEBSITE.

SPINDLE INTERFACE MUST BE SCRUTINIZED WHEN USING 16mm DIAMETER AND LARGER END MILLS

ISO Material			HRC	M/Min. (Vc)	CHIPLOAD PER TOOTH (Fz)										
					1,5mm	3,0mm	5,0mm	6,0mm	8,0mm	10,0mm	12,0mm	16,0mm	20,0mm	25,0mm	
S	COBALT BASE ALLOYS / Kobaltlegierungen / Aleaciones del cobalto / Alliages de cobalt / Leghe del cobalto / 钴基合金														
	Haynes 25/188, Stellite 21, Cobalt Chrome		< 40 > 40	25 - 45 20 - 40	0,008 - 0,015 0,008 - 0,012	0,010 - 0,018 0,008 - 0,015	0,013 - 0,020 0,010 - 0,018	0,018 - 0,030 0,015 - 0,025	0,020 - 0,038 0,018 - 0,033	0,025 - 0,048 0,023 - 0,043	0,036 - 0,061 0,030 - 0,051	0,041 - 0,076 0,036 - 0,066	0,051 - 0,097 0,046 - 0,086	0,071 - 0,122 0,061 - 0,102	
	NICKEL BASE ALLOYS / Nickellegierungen / Aleaciones de níquel / Alliage de nickel / Leghe di nichel / 高镍基合金														
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel		< 40 > 40	25 - 45 20 - 40	0,008 - 0,015 0,008 - 0,012	0,010 - 0,018 0,008 - 0,015	0,013 - 0,020 0,010 - 0,018	0,018 - 0,030 0,015 - 0,025	0,020 - 0,038 0,018 - 0,033	0,025 - 0,048 0,023 - 0,043	0,036 - 0,061 0,030 - 0,051	0,041 - 0,076 0,036 - 0,066	0,051 - 0,097 0,046 - 0,086	0,071 - 0,122 0,061 - 0,102	
	IRON BASE ALLOYS / Eisenlegierungen / Aleaciones ferrosas / Alliages ferreux / Leghe ferrose / 铁基合金														
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascology		< 40 > 40	25 - 45 20 - 40	0,008 - 0,015 0,008 - 0,012	0,010 - 0,018 0,008 - 0,015	0,013 - 0,020 0,010 - 0,018	0,018 - 0,030 0,015 - 0,025	0,020 - 0,038 0,018 - 0,033	0,025 - 0,048 0,023 - 0,043	0,036 - 0,061 0,030 - 0,051	0,041 - 0,076 0,036 - 0,066	0,051 - 0,097 0,046 - 0,086	0,071 - 0,122 0,061 - 0,102	
M	TITANIUM ALLOYS / Titanlegierungen / Aleaciones de Titanio / Alliage de Titane / Leghe di Titanio / 钛合金														
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si			55 - 90	0,008 - 0,015	0,010 - 0,018	0,013 - 0,020	0,018 - 0,036	0,020 - 0,043	0,025 - 0,053	0,036 - 0,071	0,041 - 0,086	0,051 - 0,107	0,071 - 0,142	
	5553 / Beta Titanium			40 - 70	0,008 - 0,015	0,008 - 0,018	0,010 - 0,020	0,018 - 0,030	0,020 - 0,038	0,025 - 0,048	0,036 - 0,061	0,041 - 0,076	0,051 - 0,097	0,071 - 0,122	
	STAINLESS STEELS / Rostfreie Stähle / Acero Inoxidable / Acier Inoxydable / Acciaio Inox / 不锈钢合金														
	13/8, 15/5, 17-4, pH Types		< 40 > 40	55 - 90 45 - 70	0,008 - 0,015 0,008 - 0,013	0,010 - 0,018 0,008 - 0,015	0,013 - 0,020 0,010 - 0,018	0,018 - 0,030 0,015 - 0,025	0,020 - 0,038 0,018 - 0,033	0,025 - 0,048 0,023 - 0,043	0,036 - 0,061 0,030 - 0,051	0,041 - 0,076 0,036 - 0,066	0,051 - 0,097 0,046 - 0,086	0,071 - 0,122 0,056 - 0,102	
	300 Series, 304L, Nitronic 50 Duplex, Super-Austenitic		< 40 > 40	60 - 100 55 - 75	0,008 - 0,015 0,008 - 0,013	0,010 - 0,018 0,008 - 0,015	0,013 - 0,020 0,010 - 0,018	0,018 - 0,030 0,015 - 0,028	0,020 - 0,038 0,018 - 0,036	0,025 - 0,048 0,023 - 0,046	0,036 - 0,061 0,030 - 0,056	0,041 - 0,076 0,036 - 0,071	0,051 - 0,097 0,046 - 0,091	0,071 - 0,122 0,061 - 0,112	
P	400 Series - 403, 405, 420, 455		< 40 > 40	70 - 110 55 - 75	0,008 - 0,015 0,008 - 0,013	0,010 - 0,018 0,008 - 0,015	0,013 - 0,020 0,010 - 0,018	0,018 - 0,033 0,015 - 0,028	0,020 - 0,041 0,018 - 0,036	0,025 - 0,051 0,023 - 0,046	0,036 - 0,066 0,030 - 0,056	0,041 - 0,081 0,036 - 0,071	0,061 - 0,109 0,046 - 0,091	0,071 - 0,132 0,061 - 0,112	
	HIGH STRENGTH TOOL STEELS / Hochfeste Werkzeugstähle / Herramienta aceros de alto dureza / Aciers à outils à haute résistance / Acciaio da utensili molto duro / 高强度工具钢														
	A2, D2, P20, H13, S7, O1		< 40 > 40	55 - 90 40 - 85	0,010 - 0,018 0,008 - 0,013	0,013 - 0,020 0,008 - 0,013	0,015 - 0,025 0,013 - 0,020	0,020 - 0,033 0,018 - 0,025	0,023 - 0,041 0,020 - 0,033	0,028 - 0,051 0,025 - 0,043	0,041 - 0,066 0,036 - 0,051	0,046 - 0,081 0,041 - 0,066	0,056 - 0,102 0,051 - 0,086	0,081 - 0,132 0,071 - 0,102	
	MEDIUM ALLOY TOOL STEELS / Mittel Legierte Werkzeugstähle / Aceros herramienta medios de la aleación / Aciers à outils alliés / Acciaio da utensili di media durezza / 中合金钢														
	4140, 4340, 52100, 6150, 8620		< 40 > 40	75 - 120 70 - 90	0,010 - 0,018 0,008 - 0,013	0,013 - 0,020 0,008 - 0,013	0,015 - 0,025 0,013 - 0,020	0,020 - 0,036 0,018 - 0,028	0,023 - 0,043 0,020 - 0,036	0,028 - 0,053 0,025 - 0,046	0,041 - 0,071 0,036 - 0,056	0,046 - 0,086 0,041 - 0,071	0,056 - 0,107 0,051 - 0,091	0,081 - 0,142 0,071 - 0,112	
	CARBON STEELS / Kohlenstoffstahl / Acero de carbón / Acier du carbone / Acciaio al carbonio / 碳钢														
1000's - 1018, 1020, 12L14		< 40	90 - 130	0,010 - 0,018	0,013 - 0,020	0,015 - 0,025	0,020 - 0,038	0,023 - 0,046	0,028 - 0,056	0,041 - 0,076	0,046 - 0,091	0,056 - 0,112	0,081 - 0,152		
K	CAST MATERIAL / Gegossenes Material / Material bastidor vertidos / Matériaux fontes / Materiale fuso / 铸造件														
	Ductile Iron			90 - 130	0,010 - 0,018	0,013 - 0,020	0,015 - 0,025	0,023 - 0,041	0,025 - 0,048	0,030 - 0,058	0,046 - 0,081	0,051 - 0,097	0,061 - 0,117	0,091 - 0,163	
	Gray Iron			100 - 145	0,013 - 0,020	0,018 - 0,025	0,018 - 0,030	0,025 - 0,043	0,028 - 0,051	0,033 - 0,061	0,051 - 0,086	0,056 - 0,102	0,066 - 0,122	0,102 - 0,173	

	Slotting Pocket Milling	Profiling Side Milling
Axial (ap)	up to 1.5xD	up to 2xD
Radial (ae)	1xD	5% - 15% of Dia.



NOTE - ABOVE ARE STARTING PARAMETERS ONLY. HIGHER RESULTS MAY BE ACHIEVED WITH OPTIMUM CONDITIONS.