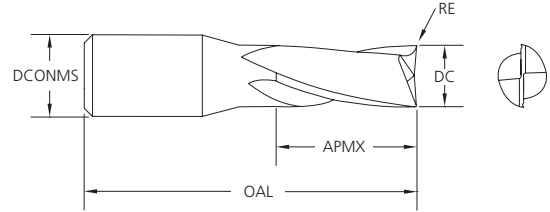
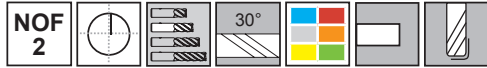


TuffCut® GP - Series 121

Designed for aggressive milling of most materials.



- Micro sizes available.

Uncoated		DC			DCONMS		OAL		APMX		RE	
Tool No.	EDP	Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm
12100500	52101			.0050	1/8		1-1/2		.015			
12100600	52191			.0060	1/8		1-1/2		.018			
12100700	52192			.0070	1/8		1-1/2		.021			
12100780	52102		0.2	.0078		3.0		38		0.6		
12100800	52193			.0080	1/8		1-1/2		.024			
12100900	52194			.0090	1/8		1-1/2		.027			
12101000	52103			.0100	1/8		1-1/2		.030			
12101100	52195			.0110	1/8		1-1/2		.033			
12101180	52104		0.3	.0118		3.0		38		0.9		
12101200	52196			.0120	1/8		1-1/2		.036			
12101300	52197			.0130	1/8		1-1/2		.039			
12101400	52198			.0140	1/8		1-1/2		.042			
12101500	52105			.0150	1/8		1-1/2		.045			
12101560	12106	1/64		.0156	1/8		1-1/2		1/32			
12101570	52107		0.4	.0157		3.0		38		1.2		
12101600	52199			.0160	1/8		1-1/2		.048			
12101700	52250			.0170	1/8		1-1/2		.051			
12101800	52251			.0180	1/8		1-1/2		.054			
12101900	52252			.0190	1/8		1-1/2		.057			
12101960	52108		0.5	.0196		3.0		38		1.5		

Series 121 coated tools on page 224.

Inch	
DC	Tolerance
1/64	+ .000/- .001
1/32 - 1/4	+ .000/- .002
>1/4 - 1	+ .000/- .003
DC Micro Sizes*	Tolerance
.005 - .100	+ .0005/- .0005

Inch	
RE	Tolerance
1/8 - 1	+ .002/- .002

Metric (mm)	
DC	Tolerance (h10)
0.20 - 0.50	+ .000/- .025
0.60 - 3.00	+ .000/- .040
>3.00 - 6.00	+ .000/- .048
>6.00 - 10.00	+ .000/- .058
>10.00 - 18.00	+ .000/- .070
>18.00 - 25.00	+ .000/- .084

Metric (mm)	
RE	Tolerance
3.0 - 25.0	+ .05/- .05



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*Inch decimal size range .005 - .100" only.



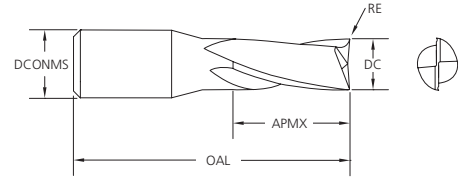
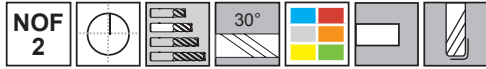
Uncoated		DC			DCONMS		OAL		APMX		RE	
Tool No.	EDP	Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm
12102000	52109			.0200	1/8		1-1/2		.060			
12102100	52253			.0210	1/8		1-1/2		.063			
12102200	52254			.0220	1/8		1-1/2		.066			
12102300	52255			.0230	1/8		1-1/2		.069			
12102360	52110		0.6	.0236		3.0		38		1.8		
12102400	52256			.0240	1/8		1-1/2		.072			
12102500	52111			.0250	1/8		1-1/2		.075			
12102600	52257			.0260	1/8		1-1/2		.078			
12102700	52258			.0270	1/8		1-1/2		.081			
12102750	52112		0.7	.0275		3.0		38		2.1		
12102800	52259			.0280	1/8		1-1/2		.084			
12102900	52260			.0290	1/8		1-1/2		.087			
12103000	52113			.0300	1/8		1-1/2		.090			
12103120	12114	1/32		.0312	1/8		1-1/2		5/64			
12103150	52115		0.8	.0315		3.0		38		2.4		
12103500	52116			.0350	1/8		1-1/2		.105			
12103540	52117		0.9	.0354		3.0		38		2.7		
12103940	12118		1.0	.0394		3.0		38		3.0		
12104000	52120			.0400	1/8		1-1/2		.120			
12104330	52121		1.1	.0433		3.0		38		3.3		
12104500	52122			.0450	1/8		1-1/2		.135			
12104680	12123	3/64		.0468	1/8		1-1/2		7/64			
12104720	52124		1.2	.0472		3.0		38		3.6		
12105000	52125			.0500	1/8		1-1/2		.150			
12105120	52126		1.3	.0512		3.0		38		3.9		
12105500	52127			.0550	1/8		1-1/2		.165			
12105510	52128		1.4	.0551		3.0		38		4.2		
12105910	12129		1.5	.0591		3.0		38		6.0		
12105911	52129		1.5	.0591		3.0		38		4.5		
12106000	52131			.0600	1/8		1-1/2		.180			
12106250	12132	1/16		.0625	1/8		1-1/2		3/16			
12106300	52133		1.6	.0630		3.0		38		4.8		
12106500	52134			.0650	1/8		1-1/2		.195			
12106690	52135		1.7	.0669		3.0		38		5.1		
12107000	52136			.0700	1/8		1-1/2		.210			
12107090	52137		1.8	.0709		3.0		38		5.4		
12107480	52138		1.9	.0748		3.0		38		5.7		
12107500	52139			.0750	1/8		1-1/2		.225			
12107810	12140	5/64		.0781	1/8		1-1/2		3/16			
12107870	12141		2.0	.0787		3.0		38		9.0		
12107871	52141		2.0	.0787		3.0		38		6.0		
12108000	52143			.0800	1/8		1-1/2		.240			



Series 121 coated tools on page 224.



TuffCut® GP - Series 121 *Continued*



Uncoated		DC			DCONMS		OAL		APMX		RE	
Tool No.	EDP	Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm
12108500	52144			.0850	1/8		1-1/2		.255			
12109000	52145			.0900	1/8		1-1/2		.270			
12109370	12146	3/32		.0937	1/8		1-1/2		9/32			
12109500	52147			.0950	1/8		1-1/2		.285			
12109840	12148		2.5	.0984		3.0		38		12.0		
12110010	52150			.1000	1/8		1-1/2		.300			
12110930	12151	7/64		.1093	1/8		1-1/2		3/8			
12111810	12152		3.0	.1181		3.0		38		12.0		
12111811	52402		3.0	.1181		3.0		38		12.0		0.500
12112500	12153	1/8		.1250	1/8		1-1/2		3/8			
12112511	52401	1/8		.1250	1/8		1-1/2		3/8			0.015
12112512	52403	1/8		.1250	1/8		1-1/2		3/8			0.020
12112501	12150	1/8		.1250	1/8		1-1/2		1/2			
12113780	12156		3.5	.1378		4.0		51		12.0		
12114060	12187	9/64		.1406	3/16		2		1/2			
12115620	12157	5/32		.1562	3/16		2		1/2			
12115750	12158		4.0	.1575		4.0		51		14.0		
12115751	52404		4.0	.1575		4.0		51		14.0		0.500
12115752	52422		4.0	.1575		4.0		51		14.0		0.750
12117190	12188	11/64		.1719	3/16		2		5/8			
12117720	12159		4.5	.1772		5.0		51		14.0		
12118750	12160	3/16		.1875	3/16		2		5/8			
12118751	52405	3/16		.1875	3/16		2		5/8			0.015
12118752	52407	3/16		.1875	3/16		2		5/8			0.020
12118753	52409	3/16		.1875	3/16		2		5/8			0.030
12119680	12161		5.0	.1968		5.0		51		20.0		
12119681	52406		5.0	.1968		5.0		51		20.0		0.500
12119682	52424		5.0	.1968		5.0		51		20.0		0.750
12119683	52440		5.0	.1968		5.0		51		20.0		1.000
12120310	12189	13/64		.2031	1/4		2-1/2		5/8			
12121650	12162		5.5	.2165		6.0		64		20.0		
12121870	12163	7/32		.2187	1/4		2-1/2		5/8			
12123440	12190	15/64		.2344	1/4		2-1/2		3/4			
12123620	12164		6.0	.2362		6.0		64		20.0		
12123621	52408		6.0	.2362		6.0		64		20.0		0.500

Series 121 coated tools on page 224.





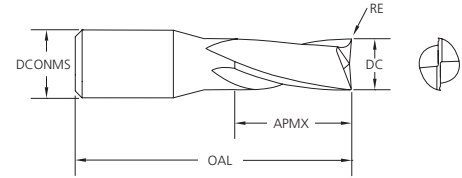
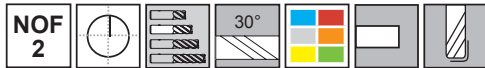
Uncoated		DC			DCONMS		OAL		APMX		RE	
Tool No.	EDP	Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm
12123622	52426		6.0	.2362		6.0		64		20.0		0.750
12123623	52442		6.0	.2362		6.0		64		20.0		1.000
12125000	12165	1/4		.2500	1/4		2-1/2		3/4			
12125001	52411	1/4		.2500	1/4		2-1/2		3/4		0.015	
12125002	52413	1/4		.2500	1/4		2-1/2		3/4		0.020	
12125003	52415	1/4		.2500	1/4		2-1/2		3/4		0.030	
12125004	52417	1/4		.2500	1/4		2-1/2		3/4		0.045	
12127560	12166		7.0	.2756		8.0		64		20.0		
12128120	12167	9/32		.2812	5/16		2-1/2		3/4			
12131250	12168	5/16		.3125	5/16		2-1/2		13/16			
12131251	52419	5/16		.3125	5/16		2-1/2		13/16		0.015	
12131252	52421	5/16		.3125	5/16		2-1/2		13/16		0.020	
12131253	52423	5/16		.3125	5/16		2-1/2		13/16		0.030	
12131254	52425	5/16		.3125	5/16		2-1/2		13/16		0.045	
12131500	12169		8.0	.3150		8.0		64		20.0		
12131501	52410		8.0	.3150		8.0		64		20.0		0.500
12131502	52428		8.0	.3150		8.0		64		20.0		0.750
12131503	52444		8.0	.3150		8.0		64		20.0		1.000
12131504	52456		8.0	.3150		8.0		64		20.0		1.500
12135430	12170		9.0	.3543		9.0		64		20.0		
12137500	12171	3/8		.3750	3/8		2-1/2		1			
12137501	52427	3/8		.3750	3/8		2-1/2		1		0.015	
12137502	52429	3/8		.3750	3/8		2-1/2		1		0.020	
12137503	52431	3/8		.3750	3/8		2-1/2		1		0.030	
12137504	52433	3/8		.3750	3/8		2-1/2		1		0.045	
12139370	12172		10.0	.3937		10.0		70		25.0		
12139371	52412		10.0	.3937		10.0		70		25.0		0.500
12139372	52430		10.0	.3937		10.0		70		25.0		0.750
12139373	52446		10.0	.3937		10.0		70		25.0		1.000
12139374	52458		10.0	.3937		10.0		70		25.0		1.500
12143310	12173		11.0	.4331		11.0		70		25.0		
12143750	12174	7/16		.4375	7/16		2-3/4		1			
12147240	12175		12.0	.4724		12.0		76		25.0		
12147241	52414		12.0	.4724		12.0		76		25.0		0.500
12147242	52432		12.0	.4724		12.0		76		25.0		0.750
12147243	52448		12.0	.4724		12.0		76		25.0		1.000
12147244	52460		12.0	.4724		12.0		76		25.0		1.500
12147245	52468		12.0	.4724		12.0		76		25.0		2.000
12150000	12176	1/2		.5000	1/2		3		1			
12150001	52435	1/2		.5000	1/2		3		1		0.015	
12150002	52437	1/2		.5000	1/2		3		1		0.020	
12150003	52439	1/2		.5000	1/2		3		1		0.030	

TuffCut® End Mills
Series 121

Series 121 coated tools on page 224.



TuffCut® GP - Series 121 *Continued*



Uncoated		DC			DCONMS		OAL		APMX		RE	
Tool No.	EDP	Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm
12150004	52441	1/2		.5000	1/2		3		1		0.045	
12150005	52443	1/2		.5000	1/2		3		1		0.060	
12155120	12177		14.0	.5512		14.0		89		30.0		
12156250	12178	9/16		.5625	9/16		3-1/2		1-1/8			
12162500	12179	5/8		.6250	5/8		3-1/2		1-1/4			
12162501	52445	5/8		.6250	5/8		3-1/2		1-1/4		0.015	
12162502	52447	5/8		.6250	5/8		3-1/2		1-1/4		0.020	
12162503	52449	5/8		.6250	5/8		3-1/2		1-1/4		0.030	
12162504	52451	5/8		.6250	5/8		3-1/2		1-1/4		0.045	
12162505	52453	5/8		.6250	5/8		3-1/2		1-1/4		0.060	
12162506	52455	5/8		.6250	5/8		3-1/2		1-1/4		0.090	
12162990	12180		16.0	.6299		16.0		89		30.0		
12162991	52416		16.0	.6299		16.0		89		30.0		0.500
12162992	52434		16.0	.6299		16.0		89		30.0		0.750
12162993	52450		16.0	.6299		16.0		89		30.0		1.000
12162994	52462		16.0	.6299		16.0		89		30.0		1.500
12162995	52470		16.0	.6299		16.0		89		30.0		2.000
12162996	52476		16.0	.6299		16.0		89		30.0		2.500
12162997	52482		16.0	.6299		16.0		89		30.0		3.000
12170870	12181		18.0	.7087		18.0		102		35.0		
12175000	12182	3/4		.7500	3/4		4		1-1/2			
12175001	52457	3/4		.7500	3/4		4		1-1/2		0.015	
12175002	52459	3/4		.7500	3/4		4		1-1/2		0.020	
12175003	52461	3/4		.7500	3/4		4		1-1/2		0.030	
12175004	52463	3/4		.7500	3/4		4		1-1/2		0.045	
12175005	52465	3/4		.7500	3/4		4		1-1/2		0.060	
12175006	52467	3/4		.7500	3/4		4		1-1/2		0.090	
12175007	52469	3/4		.7500	3/4		4		1-1/2		0.125	
12178740	12183		20.0	.7874		20.0		102		38.0		
12178741	52418		20.0	.7874		20.0		102		38.0		0.500
12178742	52436		20.0	.7874		20.0		102		38.0		0.750
12178743	52452		20.0	.7874		20.0		102		38.0		1.000
12178744	52464		20.0	.7874		20.0		102		38.0		1.500
12178745	52472		20.0	.7874		20.0		102		38.0		2.000
12178746	52478		20.0	.7874		20.0		102		38.0		2.500
12178747	52484		20.0	.7874		20.0		102		38.0		3.000

Series 121 coated tools on page 224.



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Uncoated		DC			DCONMS		OAL		APMX		RE	
Tool No.	EDP	Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm
12186620	12184		22.0	.8662		22.0		102		40.0		
12187500	12185	7/8		.8750	7/8		4		1-1/2			
12198430	12186		25.0	.9843		25.0		102		40.0		
12198431	52420		25.0	.9843		25.0		102		40.0		0.500
12198432	52438		25.0	.9843		25.0		102		40.0		0.750
12198433	52454		25.0	.9843		25.0		102		40.0		1.000
12198434	52466		25.0	.9843		25.0		102		40.0		1.500
12198435	52474		25.0	.9843		25.0		102		40.0		2.000
12198436	52480		25.0	.9843		25.0		102		40.0		2.500
12198437	52486		25.0	.9843		25.0		102		40.0		3.000
12110000	12149	1		1.0000	1		4		1-1/2			
12110001	52471	1		1.0000	1		4		1-1/2		0.015	
12110002	52473	1		1.0000	1		4		1-1/2		0.020	
12110003	52475	1		1.0000	1		4		1-1/2		0.030	
12110004	52477	1		1.0000	1		4		1-1/2		0.045	
12110005	52479	1		1.0000	1		4		1-1/2		0.060	
12110006	52481	1		1.0000	1		4		1-1/2		0.090	
12110007	52483	1		1.0000	1		4		1-1/2		0.125	

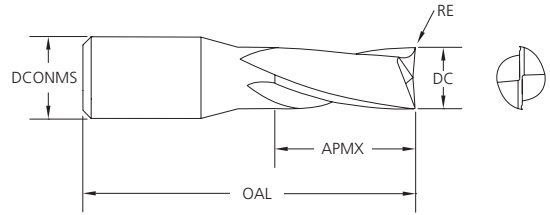
Series 121 coated tools on page 224.



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TuffCut® GP - Series 121 Coated



TIN		ALtima®		TiCN		DC			DCONMS		OAL		APMX	
Tool No.	EDP	Tool No.	EDP	Tool No.	EDP	Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm
		12103940A	12119				1.0	.0394		3.0		38		3.0
		12105910A	12130				1.5	.0591		3.0		38		6.0
		12107870A	12142				2.0	.0787		3.0		38		9.0
		12109840A	12147				2.5	.0984		3.0		38		12.0
12111810T	12270	12111810A	52153	12111810C	52154		3.0	.1181		3.0		38		12.0
12112500T	12261	12112500A	52155	12112500C	52156	1/8		.1250	1/8		1-1/2		3/8	
12115750T	12278	12115750A	52157	12115750C	52158		4.0	.1575		4.0		51		14.0
12118750T	12262	12118750A	52159	12118750C	52160	3/16		.1875	3/16		2		5/8	
12119680T	12271	12119680A	52161	12119680C	52162		5.0	.1968		5.0		51		20.0
12123620T	12272	12123620A	52163	12123620C	52164		6.0	.2362		6.0		64		20.0
12125000T	12263	12125000A	52165	12125000C	52166	1/4		.2500	1/4		2-1/2		3/4	
12131250T	12264	12131250A	52167	12131250C	52168	5/16		.3125	5/16		2-1/2		13/16	
12131500T	12273	12131500A	52169	12131500C	52170		8.0	.3150		8.0		64		20.0
12137500T	12265	12137500A	52171	12137500C	52172	3/8		.3750	3/8		2-1/2		1	
12139370T	12274	12139370A	52173	12139370C	52174		10.0	.3937		10.0		70		25.0
12143750T	12266	12143750A	52175	12143750C	52176	7/16		.4375	7/16		2-3/4		1	
12147240T	12275	12147240A	52177	12147240C	52178		12.0	.4724		12.0		76		25.0
12150000T	12267	12150000A	52179	12150000C	52180	1/2		.5000	1/2		3		1	
12162500T	12268	12162500A	52181	12162500C	52182	5/8		.6250	5/8		3-1/2		1-1/4	
12162990T	12276	12162990A	52183	12162990C	52184		16.0	.6299		16.0		89		30.0
12175000T	12269	12175000A	52185	12175000C	52186	3/4		.7500	3/4		4		1-1/2	
12178740T	12277	12178740A	52187	12178740C	52188		20.0	.7874		20.0		102		38.0
12198430T	12280	12198430A	52189	12198430C	52190		25.0	.9843		25.0		102		40.0
12110000T	12279	12110000A	52151	12110000C	52152	1		1.0000	1		4		1-1/2	

Series 121 uncoated tools on page 218.

