

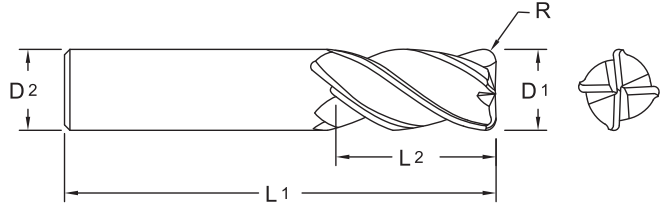
NEW TuffCut® XR Series 177/177W



Designed for EXTREME Productivity. Unique flute geometry reduces harmonics at increased feeds and speeds.

New-Standard Offering with Weldon Shank Flats

4
Flute



ALtima®		ALtima® Weldon Flat		Diameter			Shank		OAL		Flute Length		Corner Radius	
Tool No.	EDP	Tool No.	EDP	D1			D2 h6		L1		L2		R	
				Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm
17705900A	17680				1.5	.0591		3.0		38		3.0		
17706250A	17692			1/16		.0625	1/8		1-1/2		1/8			
17707810A	17694			5/64		.0781	1/8		1-1/2		5/32			
17707870A	17682				2.0	.0787		3.0		38		4.0		
17709370A	17696			3/32		.0937	1/8		1-1/2		3/16			
17709840A	17684				2.5	.0984		3.0		38		5.0		
17711800A	17928				3.0	.1181		6.0		57		8.0		
17711801A	17783				3.0	.1181		6.0		57		8.0		0.50
17711803A	17686				3.0	.1181		3.0		38		6.0		
17711808A	17929				3.0	.1181		6.0		57		8.0		0.25
17712500A	17700			1/8		.1250	1/8		1-1/2		1/8			
17712502A	17729			1/8		.1250	1/8		1-1/2		1/8		0.015	
17712510A	17701			1/8		.1250	1/8		1-1/2		3/8			
17712512A	17730			1/8		.1250	1/8		1-1/2		3/8		0.015	
17713700A	17688				3.5	.1378		6.0		57		7.0		
17715600A	17702			5/32		.1562	3/16		2		3/16			
17715602A	17731			5/32		.1562	3/16		2		3/16		0.015	
17715610A	17703			5/32		.1562	3/16		2		7/16			
17715612A	17732			5/32		.1562	3/16		2		7/16		0.015	
17715700A	17930				4.0	.1575		6.0		57		11.0		
17715701A	17784				4.0	.1575		6.0		57		11.0		0.50
17715708A	17931				4.0	.1575		6.0		57		11.0		0.25
17717700A	17690				4.5	.1772		6.0		57		9.0		
17718700A	17704			3/16		.1875	3/16		2		3/16			
17718702A	17733			3/16		.1875	3/16		2		3/16		0.015	
17718704A	17734			3/16		.1875	3/16		2		3/16		0.030	
17718710A	17705			3/16		.1875	3/16		2		7/16			
17718712A	17735			3/16		.1875	3/16		2		7/16		0.015	

Inch	
D1	Tolerance
1/16-1/4	+0.00/-0.002
> 1/4-1.0	+0.00/-0.003

Metric (mm)	
D1	Tolerance h10
1.50-3.00	+0.00/-0.040
>3.00-6.00	+0.00/-0.048
>6.00-10.00	+0.00/-0.058
>10.00-18.00	+0.00/-0.070
>18.00-25.00	+0.00/-0.084

Inch	
D2	Tolerance (h6)
.1182 - .2362	+0/-0.00031
.2363 - .3937	+0/-0.00035
.3938 - .7087	+0/-0.00043
.7088 - 1.000	+0/-0.00051

Metric (mm)	
D2	Tolerance (h6)
3.0	+0/-0.006
3.01 - 6.0	+0/-0.008
6.01 - 10.0	+0/-0.009
10.01 - 18.0	+0/-0.011
18.01 - 25.0	+0/-0.013



Series 177/177W Continued

ALtima®		ALtima® Weldon Flat		Diameter			Shank		OAL		Flute Length		Corner Radius	
Tool No.	EDP	Tool No.	EDP	D1			D2 h6		L1		L2		R	
				Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm
17718714A	17736			3/16		.1875	3/16		2		7/16		0.030	
17719600A	17932				5.0	.1968		6.0		57		13.0		
17719601A	17785				5.0	.1968		6.0		57		13.0		0.50
17719608A	17933				5.0	.1968		6.0		57		13.0		0.25
17721800A	17706			7/32		.2187	1/4		2		1/4			
17721802A	17737			7/32		.2187	1/4		2		1/4		0.015	
17721804A	17738			7/32		.2187	1/4		2		1/4		0.030	
17721810A	17707			7/32		.2187	1/4		2-1/2		7/16			
17721812A	17739			7/32		.2187	1/4		2-1/2		7/16		0.015	
17721814A	17740			7/32		.2187	1/4		2-1/2		7/16		0.030	
17723600A	17934				6.0	.2362		6.0		57		13.0		
17723608A	17786				6.0	.2362		6.0		57		13.0		0.25
17723601A	17935				6.0	.2362		6.0		57		13.0		0.50
17723603A	17787				6.0	.2362		6.0		57		13.0		1.00
17723604A	17788				6.0	.2362		6.0		57		13.0		1.50
17723605A	18070				6.0	.2362		6.0		57		13.0		2.00
17725000A	17708			1/4		.2500	1/4		2		1/4			
17725002A	17741			1/4		.2500	1/4		2		1/4		0.015	
17725004A	17742			1/4		.2500	1/4		2		1/4		0.030	
17725010A	17709			1/4		.2500	1/4		2-1/2		1/2			
17725012A	17743			1/4		.2500	1/4		2-1/2		1/2		0.015	
17725014A	17744			1/4		.2500	1/4		2-1/2		1/2		0.030	
17728100A	17710			9/32		.2812	5/16		2-1/2		5/8			
17728102A	17745			9/32		.2812	5/16		2-1/2		5/8		0.015	
17728104A	17746			9/32		.2812	5/16		2-1/2		5/8		0.030	
17731200A	17711			5/16		.3125	5/16		2		5/16			
17731202A	17747			5/16		.3125	5/16		2		5/16		0.015	
17731204A	17748			5/16		.3125	5/16		2		5/16		0.030	
17731210A	17712			5/16		.3125	5/16		2-1/2		13/16			
17731212A	17749			5/16		.3125	5/16		2-1/2		13/16		0.015	
17731214A	17750			5/16		.3125	5/16		2-1/2		13/16		0.030	
17731500A	17937				8.0	.3150		8.0		63		19.0		
17731501A	17938				8.0	.3150		8.0		63		19.0		0.50
17731503A	17789				8.0	.3150		8.0		63		19.0		1.00
17731504A	17790				8.0	.3150		8.0		63		19.0		1.50
17731505A	17791				8.0	.3150		8.0		63		19.0		2.00
17731507A	18072				8.0	.3150		8.0		63		19.0		3.00
17734300A	17713			11/32		.3438	3/8		2-1/2		13/16			
17734302A	17751			11/32		.3438	3/8		2-1/2		13/16		0.015	
17734304A	17752			11/32		.3438	3/8		2-1/2		13/16		0.030	
17737500A	17714			3/8		.3750	3/8		2		3/8			
17737502A	17753			3/8		.3750	3/8		2		3/8		0.015	
17737504A	17754			3/8		.3750	3/8		2		3/8		0.030	
17737510A	17715			3/8		.3750	3/8		2-1/2		7/8			
17737512A	17755			3/8		.3750	3/8		2-1/2		7/8		0.015	
17737514A	17756			3/8		.3750	3/8		2-1/2		7/8		0.030	



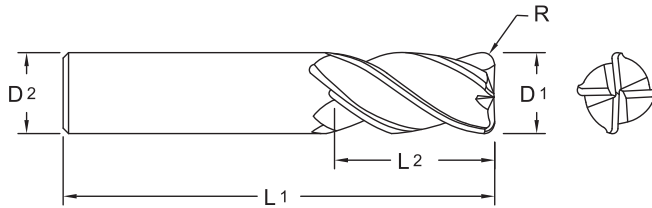
End Mills



Series 177/177W Continued



4
Flute



ALtima®		ALtima® Weldon Flat		Diameter			Shank		OAL		Flute Length		Corner Radius	
Tool No.	EDP	Tool No.	EDP	D1			D2 h6		L1		L2		R	
Tool No.	EDP	Tool No.	EDP	Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm
17739300A	17940				10.0	.3937		10.0		72		22.0		
17739301A	17941				10.0	.3937		10.0		72		22.0		0.50
17739303A	17792				10.0	.3937		10.0		72		22.0		1.00
17739304A	17793				10.0	.3937		10.0		72		22.0		1.50
17739305A	17794				10.0	.3937		10.0		72		22.0		2.00
17739307A	96603				10.0	.3937		10.0		72		22.0		3.00
17740600A	17716			13/32		.4062	7/16		2-3/4		15/16			
17740602A	17757			13/32		.4062	7/16		2-3/4		15/16		0.015	
17740604A	17758			13/32		.4062	7/16		2-3/4		15/16		0.030	
17743700A	17717			7/16		.4375	7/16		2-1/2		7/16			
17743702A	17759			7/16		.4375	7/16		2-1/2		7/16		0.015	
17743704A	17760			7/16		.4375	7/16		2-1/2		7/16		0.030	
17743710A	17718			7/16		.4375	7/16		2-3/4		1			
17743712A	17761			7/16		.4375	7/16		2-3/4		1		0.015	
17743714A	17762			7/16		.4375	7/16		2-3/4		1		0.030	
17746800A	17719			15/32		.4688	1/2		3		1			
17746802A	17763			15/32		.4688	1/2		3		1		0.015	
17746804A	17764			15/32		.4688	1/2		3		1		0.030	
17747200A	17943				12.0	.4724		12.0		83		26.0		
17747201A	17795				12.0	.4724		12.0		83		26.0		0.50
17747202A	17944				12.0	.4724		12.0		83		26.0		0.75
17747203A	17796				12.0	.4724		12.0		83		26.0		1.00
17747204A	17797				12.0	.4724		12.0		83		26.0		1.50
17747205A	17798				12.0	.4724		12.0		83		26.0		2.00
17747206A	18074				12.0	.4724		12.0		83		26.0		2.50
17747207A	96506				12.0	.4724		12.0		83		26.0		3.00
17747209A	18076				12.0	.4724		12.0		83		26.0		4.00
17750000A	17720	17750000AW	13166	1/2		.5000	1/2		2-1/2		1/2			
17750002A	17765	17750002AW	13167	1/2		.5000	1/2		2-1/2		1/2		0.015	
17750004A	17766	17750004AW	13168	1/2		.5000	1/2		2-1/2		1/2		0.030	
17750010A	17721	17750010AW	58038	1/2		.5000	1/2		3		1			
17750012A	17767	17750012AW	13169	1/2		.5000	1/2		3		1		0.015	



Series 177/177W Continued



ALtima®		ALtima® Weldon Flat		Diameter			Shank		OAL		Flute Length		Corner Radius	
Tool No.	EDP	Tool No.	EDP	D1			D2 h6		L1		L2		R	
				Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm
17750014A	17768	17750014AW	58039	1/2		.5000	1/2		3		1		0.030	
17750016A	17901	17750016AW	58061	1/2		.5000	1/2		3		1		0.060	
17750017A	17902	17750017AW	13170	1/2		.5000	1/2		3		1		0.090	
17750018A	17903	17750018AW	13171	1/2		.5000	1/2		3		1		0.125	
17750020A	18094	17750020AW	58056	1/2		.5000	1/2		3		1-1/4			
17750022A	18095	17750022AW	13172	1/2		.5000	1/2		3		1-1/4		.015	
17750024A	18096	17750024AW	58051	1/2		.5000	1/2		3		1-1/4		.030	
17750026A	18097	17750026AW	12610	1/2		.5000	1/2		3		1-1/4		.060	
17750027A	18098	17750027AW	13173	1/2		.5000	1/2		3		1-1/4		.090	
17750028A	18099	17750028AW	13174	1/2		.5000	1/2		3		1-1/4		.125	
17755100A	17946				14.0	.5512		14.0		83		26.0		
17755102A	17947				14.0	.5512		14.0		83		26.0		0.75
17756200A	17722			9/16		.5625	9/16		3-1/2		1-1/8			
17756202A	17769			9/16		.5625	9/16		3-1/2		1-1/8		0.015	
17756204A	17770			9/16		.5625	9/16		3-1/2		1-1/8		0.030	
17762500A	17723	17762500AW	13175	5/8		.6250	5/8		3		5/8			
17762502A	18000	17762502AW	13176	5/8		.6250	5/8		3		5/8		0.015	
17762504A	17771	17762504AW	13177	5/8		.6250	5/8		3		5/8		0.030	
17762505A	17772	17762505AW	13178	5/8		.6250	5/8		3		5/8		0.045	
17762510A	17724	17762510AW	58040	5/8		.6250	5/8		3-1/2		1-1/4			
17762512A	18001	17762512AW	13179	5/8		.6250	5/8		3-1/2		1-1/4		0.015	
17762514A	17773	17762514AW	58041	5/8		.6250	5/8		3-1/2		1-1/4		0.030	
17762515A	17774	17762515AW	13180	5/8		.6250	5/8		3-1/2		1-1/4		0.045	
17762516A	17904	17762516AW	13181	5/8		.6250	5/8		3-1/2		1-1/4		0.060	
17762517A	17905	17762517AW	13182	5/8		.6250	5/8		3-1/2		1-1/4		0.090	
17762518A	17906	17762518AW	13183	5/8		.6250	5/8		3-1/2		1-1/4		0.125	
17762900A	17950				16.0	.6299		16.0		92		32.0		
17762901A	18078				16.0	.6299		16.0		92		32.0		0.50
17762903A	17951				16.0	.6299		16.0		92		32.0		1.00
17762904A	17799				16.0	.6299		16.0		92		32.0		1.50
17762905A	17673				16.0	.6299		16.0		92		32.0		2.00
17762906A	18080				16.0	.6299		16.0		92		32.0		2.50
17762907A	17674				16.0	.6299		16.0		92		32.0		3.00
17762909A	18082				16.0	.6299		16.0		92		32.0		4.00
17770800A	17952				18.0	.7087		18.0		92		32.0		
17770803A	17953				18.0	.7087		18.0		92		32.0		1.00
17775000A	17725	17775000AW	13184	3/4		.7500	3/4		3		3/4			
17775002A	18002	17775002AW	13185	3/4		.7500	3/4		3		3/4		0.015	
17775004A	17775	17775004AW	13186	3/4		.7500	3/4		3		3/4		0.030	
17775005A	17776	17775005AW	14590	3/4		.7500	3/4		3		3/4		0.045	
17775010A	17726	17775010AW	58042	3/4		.7500	3/4		4		1-1/2			
17775012A	18003	17775012AW	13187	3/4		.7500	3/4		4		1-1/2		0.015	

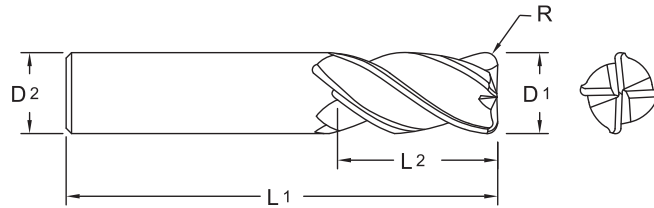
End Mills



Series 177/177W Continued

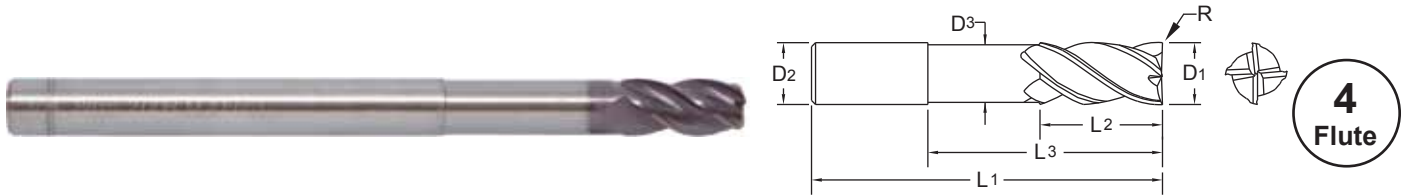


4
Flute



ALtima®		ALtima® Weldon Flat		Diameter			Shank		OAL		Flute Length		Corner Radius	
Tool No.	EDP	Tool No.	EDP	D1			D2 h6		L1		L2		R	
				Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm
17775014A	17777	17775014AW	58043	3/4		.7500	3/4		4		1-1/2		0.030	
17775015A	17778	17775015AW	13188	3/4		.7500	3/4		4		1-1/2		0.045	
17775016A	17907	17775016AW	58053	3/4		.7500	3/4		4		1-1/2		0.060	
17775017A	17908	17775017AW	13189	3/4		.7500	3/4		4		1-1/2		0.090	
17775018A	17909	17775018AW	13190	3/4		.7500	3/4		4		1-1/2		0.125	
17778700A	17955				20.0	.7874		20.0		104		38.0		
17778703A	17956				20.0	.7874		20.0		104		38.0		1.00
17778704A	18091				20.0	.7874		20.0		104		38.0		1.50
17778705A	18084				20.0	.7874		20.0		104		38.0		2.00
17778707A	18086				20.0	.7874		20.0		104		38.0		3.00
17778709A	18088				20.0	.7874		20.0		104		38.0		4.00
177787011A	18090				20.0	.7874		20.0		104		38.0		5.00
177787012A	18092				20.0	.7874		20.0		104		38.0		6.00
17798400A	17957				25.0	.9843		25.0		104		38.0		
17798403A	17958				25.0	.9843		25.0		104		38.0		1.00
17710000A	17727	17710000AW	13191	1		1.0000	1		4		1			
17710002A	18004	17710002AW	13192	1		1.0000	1		4		1		0.015	
17710004A	17779	17710004AW	13193	1		1.0000	1		4		1		0.030	
17710005A	17780	17710005AW	13194	1		1.0000	1		4		1		0.045	
17710010A	17728	17710010AW	58078	1		1.0000	1		4		1-1/2			
17710012A	18005	17710012AW	13195	1		1.0000	1		4		1-1/2		0.015	
17710014A	17781	17710014AW	58033	1		1.0000	1		4		1-1/2		0.030	
17710015A	17782	17710015AW	13197	1		1.0000	1		4		1-1/2		0.045	
17710016A	17910	17710016AW	13198	1		1.0000	1		4		1-1/2		0.060	
17710017A	17911	17710017AW	13199	1		1.0000	1		4		1-1/2		0.090	
17710018A	17912	17710018AW	13200	1		1.0000	1		4		1-1/2		0.125	

TuffCut® XR Series 177L



ALtima®		Diameter		Shank	Neck Dia.	OAL	Flute Length	Neck Length	Corner Radius
		D1 h10		D2 h6	D3	L1	L2	L3	R
Tool No.	EDP	mm	Decimal	mm	mm	mm	mm	mm	mm
177L2360R010N5A	18186	6	.2362	6	5.8	101	12	31	0.25
177L2360R020N5A	18183	6	.2362	6	5.8	101	12	31	0.5
177L2360R039N5A	18184	6	.2362	6	5.8	101	12	31	1.0
177L3150R020N5A	18187	8	.3150	8	7.6	101	16	41	0.5
177L3150R039N5A	18194	8	.3150	8	7.6	101	16	41	1.0
177L3150R078N5A	18195	8	.3150	8	7.6	101	16	41	2.0
177L3150R118N5A	18196	8	.3150	8	7.6	101	16	41	3.0
177L3930R020N5A	18188	10	.3937	10	9.6	127	20	51	0.5
177L3930R039N5A	18197	10	.3937	10	9.6	127	20	51	1.0
177L3930R078N5A	18198	10	.3937	10	9.6	127	20	51	2.0
177L3930R118N5A	18199	10	.3937	10	9.6	127	20	51	3.0
177L4720R020N5A	18189	12	.4724	12	11.4	152	24	62	0.5
177L4720R039N5A	18176	12	.4724	12	11.4	152	24	62	1.0
177L4720R078N5A	18177	12	.4724	12	11.4	152	24	62	2.0
177L4720R118N5A	18190	12	.4724	12	11.4	152	24	62	3.0
177L4720R157N5A	18178	12	.4724	12	11.4	152	24	62	4.0
177L6290R020N5A	18181	16	.6299	16	15.2	152	32	82	0.5
177L6290R039N5A	18191	16	.6299	16	15.2	152	32	82	1.0
177L6290R078N5A	18179	16	.6299	16	15.2	152	32	82	2.0
177L6290R118N5A	18180	16	.6299	16	15.2	152	32	82	3.0
177L7870R020N5A	18182	20	.7874	20	19.2	152	40	102	0.5
177L7870R039N5A	18192	20	.7874	20	19.2	152	40	102	1.0
177L7870R118N5A	18193	20	.7874	20	19.2	152	40	102	3.0

Inch sizes available upon request.

Metric (mm)		Metric (mm)	
D1	Tolerance h10	D2	Tolerance (h6)
6.00	+0.00/-0.048	6.0	+0/-0.008
>6.00-10.00	+0.00/-0.058	6.01 - 10.0	+0/-0.009
>10.00-18.00	+0.00/-0.070	10.01 - 18.0	+0/-0.011
>18.00-20.00	+0.00/-0.084	18.01 - 20.0	+0/-0.013

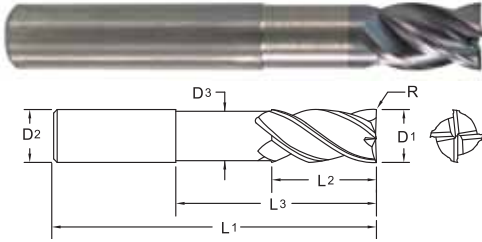


End Mills

TuffCut® XR Series 177S



4
Flute



Metric (mm)	
D1	Tolerance h10
3.00	+0.00/-0.040
>3.00-6.00	+0.00/-0.048
>6.00-10.00	+0.00/-0.058
>10.00-18.00	+0.00/-0.070
>18.00-20.00	+0.00/-0.084

Metric (mm)	
D2	Tolerance (h6)
6.0	+0/-0.008
6.01 - 10.0	+0/-0.009
10.01 - 18.0	+0/-0.011
18.01 - 20.0	+0/-0.013

ALtima®		Diameter		Shank	Neck Diameter	OAL	Flute Length	Neck Length	Corner Radius	Shank
		D1 h10								
Tool No.	EDP	mm	Decimal	D2 h6	D3	L1	L2	L3	R	
177S1181A	18218	3	.1181	6	2.9	50	5	11		DIN 6535 HA
177S1181R008A	18200	3	.1181	6	2.9	50	5	11	0.20	DIN 6535 HA
177S1181AW	18254	3	.1181	6	2.9	50	5	11		DIN 6535 HB
177S1181R008AW	18236	3	.1181	6	2.9	50	5	11	0.20	DIN 6535 HB
177S1575A	18220	4	.1575	6	3.9	50	6	14		DIN 6535 HA
177S1575R008A	18202	4	.1575	6	3.9	50	6	14	0.20	DIN 6535 HA
177S1575AW	18256	4	.1575	6	3.9	50	6	14		DIN 6535 HB
177S1575R008AW	18238	4	.1575	6	3.9	50	6	14	0.20	DIN 6535 HB
177S1969A	18222	5	.1968	6	4.9	57	8	17		DIN 6535 HA
177S1969R008A	18204	5	.1968	6	4.9	57	8	17	0.20	DIN 6535 HA
177S1969AW	18258	5	.1968	6	4.9	57	8	17		DIN 6535 HB
177S1969R008AW	18240	5	.1968	6	4.9	57	8	17	0.20	DIN 6535 HB
177S2362A	18224	6	.2362	6	5.8	57	9	20		DIN 6535 HA
177S2362R012A	18206	6	.2362	6	5.8	57	9	20	0.30	DIN 6535 HA
177S2362AW	18260	6	.2362	6	5.8	57	9	20		DIN 6535 HB
177S2362R012AW	18242	6	.2362	6	5.8	57	9	20	0.30	DIN 6535 HB
177S3150A	18226	8	.3150	8	7.6	63	12	26		DIN 6535 HA
177S3150R020A	18208	8	.3150	8	7.6	63	12	26	0.50	DIN 6535 HA
177S3150AW	18262	8	.3150	8	7.6	63	12	26		DIN 6535 HB
177S3150R020AW	18244	8	.3150	8	7.6	63	12	26	0.50	DIN 6535 HB
177S3937A	18228	10	.3937	10	9.6	72	15	32		DIN 6535 HA
177S3937R020A	18210	10	.3937	10	9.6	72	15	32	0.50	DIN 6535 HA
177S3937AW	18264	10	.3937	10	9.6	72	15	32		DIN 6535 HB
177S3937R020AW	18246	10	.3937	10	9.6	72	15	32	0.50	DIN 6535 HB
177S4724A	18230	12	.4724	12	11.4	83	18	38		DIN 6535 HA
177S4724R020A	18212	12	.4724	12	11.4	83	18	38	0.50	DIN 6535 HA
177S4724AW	18266	12	.4724	12	11.4	83	18	38		DIN 6535 HB
177S4724R020AW	18248	12	.4724	12	11.4	83	18	38	0.50	DIN 6535 HB
177S6299A	18232	16	.6299	16	15.2	98	24	50		DIN 6535 HA
177S6299R039A	18214	16	.6299	16	15.2	98	24	50	1.00	DIN 6535 HA
177S6299AW	18268	16	.6299	16	15.2	98	24	50		DIN 6535 HB
177S6299R039AW	18250	16	.6299	16	15.2	98	24	50	1.00	DIN 6535 HB
177S7874A	18234	20	.7874	20	19.2	112	30	62		DIN 6535 HA
177S7874R039A	18216	20	.7874	20	19.2	112	30	62	1.00	DIN 6535 HA
177S7874AW	18270	20	.7874	20	19.2	112	30	62		DIN 6535 HB
177S7874R039AW	18252	20	.7874	20	19.2	112	30	62	1.00	DIN 6535 HB

Inch sizes available upon request.

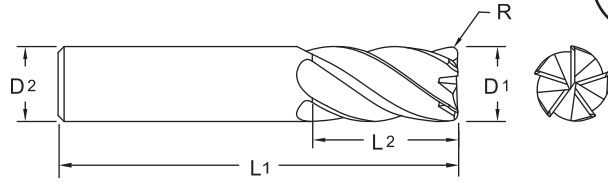
NEW TuffCut® XR Series 178/178W



Designed for EXTREME Productivity. Gain 20% or more in productivity over four flute styles. Smooth cutting action to eliminate vibration.

5
Flute

New-Standard Offering with Weldon Shank Flats



ALtima®		ALtima® Weldon Flat		Diameter			Shank		OAL		Flute Length		Corner Radius	
Tool No.	EDP	Tool No.	EDP	D1			D2 h6		L1		L2		R	
				Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm
17811800A	17959				3	.1181		6		57		8		
17811810A	17998				3	.1181		3		75		25		
17812500A	17800			1/8		.1250	1/8		1-1/2		1/8			
17812510A	17801			1/8		.1250	1/8		1-1/2		3/8			
17815600A	17802			5/32		.1562	3/16		2		3/16			
17815610A	17803			5/32		.1562	3/16		2		7/16			
17815700A	17961				4	.1575		6		57		11		
17815710A	17999				4	.1575		4		75		25		
17818700A	17804			3/16		.1875	3/16		2		3/16			
17818710A	17805			3/16		.1875	3/16		2		7/16			
17819600A	17963				5	.1968		6		57		13		
17819610A	18026				5	.1968		5		75		25		
17821800A	17806			7/32		.2187	1/4		2		1/4			
17821810A	17807			7/32		.2187	1/4		2-1/2		7/16			
17823600A	17965				6	.2362		6		57		13		
17823601A	17966				6	.2362		6		57		13		0.500
17823610A	18027				6	.2362		6		75		25		
17825000A	17808			1/4		.2500	1/4		2		3/8			
17825002A	17829			1/4		.2500	1/4		2		3/8		0.015	
17825004A	17830			1/4		.2500	1/4		2		3/8		0.030	
17825010A	17809			1/4		.2500	1/4		2-1/2		5/8			
17825012A	17831			1/4		.2500	1/4		2-1/2		5/8		0.015	
17825014A	17832			1/4		.2500	1/4		2-1/2		5/8		0.030	
17825022A	18105			1/4		.2500	1/4		2-1/2		3/4		0.015	
17828100A	17810			9/32		.2812	5/16		2-1/2		5/8			
17828102A	17835			9/32		.2812	5/16		2-1/2		5/8		0.015	
17828104A	17836			9/32		.2812	5/16		2-1/2		5/8		0.030	
17831200A	17811			5/16		.3125	5/16		2		7/16			
17831202A	17837			5/16		.3125	5/16		2		7/16		0.015	
17831204A	17838			5/16		.3125	5/16		2		7/16		0.030	

Inch	
D1	Tolerance
1/8-1/4	+0.000/-0.002
> 1/4-1.0	+0.000/-0.003

Metric (mm)	
D1	Tolerance h10
3.00	+0.000/-0.040
>3.00-6.00	+0.000/-0.048
>6.00-10.00	+0.000/-0.058
>10.00-18.00	+0.000/-0.070
>18.00-25.00	+0.000/-0.084

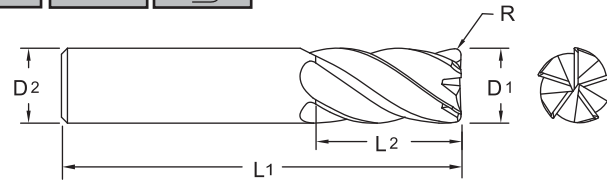
Inch	
D2	Tolerance (h6)
.1182 - .2362	+0/-0.00031
.2363 - .3937	+0/-0.00035
.3938 - .7087	+0/-0.00043
.7088 - 1.000	+0/-0.00051

Metric (mm)	
D2	Tolerance (h6)
3.0	+0/-0.006
3.01 - 6.0	+0/-0.008
6.01 - 10.0	+0/-0.009
10.01 - 18.0	+0/-0.011
18.01 - 25.0	+0/-0.013

Series 178/178W Continued



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Flute



ALtima®		ALtima® Weldon Flat		Diameter			Shank		OAL		Flute Length		Corner Radius	
Tool No.	EDP	Tool No.	EDP	D1			D2 h6		L1		L2		R	
				Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm
17831210A	17812			5/16		.3125	5/16		2-1/2		13/16			
17831212A	17839			5/16		.3125	5/16		2-1/2		13/16		0.015	
17831214A	17840			5/16		.3125	5/16		2-1/2		13/16		0.030	
17831500A	17968				8	.3150		8		63		19		
17831501A	17969				8	.3150		8		63		19		0.500
17831510A	18028				8	.3150		8		75		30		
17834300A	17813			11/32		.3438	3/8		2-1/2		13/16			
17834302A	17843			11/32		.3438	3/8		2-1/2		13/16		0.015	
17834304A	17844			11/32		.3438	3/8		2-1/2		13/16		0.030	
17837500A	17814			3/8		.3750	3/8		2		1/2			
17837502A	17845			3/8		.3750	3/8		2		1/2		0.015	
17837504A	17846			3/8		.3750	3/8		2		1/2		0.030	
17837510A	17815			3/8		.3750	3/8		2-1/2		7/8			
17837512A	17847			3/8		.3750	3/8		2-1/2		7/8		0.015	
17837514A	17848			3/8		.3750	3/8		2-1/2		7/8		0.030	
17839300A	17971				10	.3937		10		72		22		
17839301A	17972				10	.3937		10		72		22		0.500
17839310A	18029				10	.3937		10		100		45		
17840600A	17816			13/32		.4062	7/16		2-3/4		7/8			
17840602A	17853			13/32		.4062	7/16		2-3/4		7/8		0.015	
17840604A	17854			13/32		.4062	7/16		2-3/4		7/8		0.030	
17843700A	17817			7/16		.4375	7/16		2-1/2		9/16			
17843702A	17855			7/16		.4375	7/16		2-1/2		9/16		0.015	
17843704A	17856			7/16		.4375	7/16		2-1/2		9/16		0.030	
17843710A	17818			7/16		.4375	7/16		2-3/4		1			
17843712A	17857			7/16		.4375	7/16		2-3/4		1		0.015	
17843714A	17858			7/16		.4375	7/16		2-3/4		1		0.030	
17846800A	17819			15/32		.4688	1/2		3		1			
17846802A	17863			15/32		.4688	1/2		3		1		0.015	
17846804A	17864			15/32		.4688	1/2		3		1		0.030	
17847200A	17974				12	.4724		12		83		26		
17847202A	17975				12	.4724		12		83		26		0.750
17847210A	18030				12	.4724		12		150		75		
17850000A	17820	17850000AW	10655	1/2		.5000	1/2		2-1/2		5/8			
17850002A	17865	17850002AW	13337	1/2		.5000	1/2		2-1/2		5/8		0.015	
17850004A	17866	17850004AW	13339	1/2		.5000	1/2		2-1/2		5/8		0.030	
17850010A	17821	17850010AW	13341	1/2		.5000	1/2		3		1			
17850012A	17867	17850012AW	13343	1/2		.5000	1/2		3		1		0.015	
17850014A	17868	17850014AW	13345	1/2		.5000	1/2		3		1		0.030	
17850015A	17869	17850015AW	13347	1/2		.5000	1/2		3		1		0.045	
17850016A	17913	17850016AW	13349	1/2		.5000	1/2		3		1		0.060	
17850017A	17914	17850017AW	13351	1/2		.5000	1/2		3		1		0.090	



Series 178/178W Continued

ALtima®		ALtima® Weldon Flat		Diameter			Shank		OAL		Flute Length		Corner Radius	
Tool No.	EDP	Tool No.	EDP	D1			D2 h6		L1		L2		R	
				Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm
17850018A	17915	17850018AW	13353	1/2		.5000	1/2		3		1		0.125	
17855100A	17977				14	.5512		14		83		26		
17855102A	17978				14	.5512		14		83		26		0.750
17856200A	17822	17856200AW	13355	9/16		.5625	9/16		3-1/2		1-1/8			
17856202A	17875	17856202AW	13357	9/16		.5625	9/16		3-1/2		1-1/8		0.015	
17856204A	17876	17856204AW	13359	9/16		.5625	9/16		3-1/2		1-1/8		0.030	
17862500A	17823	17862500AW	13361	5/8		.6250	5/8		3		3/4			
17862502A	18006	17862502AW	13363	5/8		.6250	5/8		3		3/4		0.015	
17862504A	17877	17862504AW	13365	5/8		.6250	5/8		3		3/4		0.030	
17862505A	17878	17862505AW	13367	5/8		.6250	5/8		3		3/4		0.045	
17862510A	17824	17862510AW	13369	5/8		.6250	5/8		3-1/2		1-1/4			
17862512A	18007	17862512AW	13371	5/8		.6250	5/8		3-1/2		1-1/4		0.015	
17862514A	17879	17862514AW	13373	5/8		.6250	5/8		3-1/2		1-1/4		0.030	
17862515A	17880	17862515AW	13375	5/8		.6250	5/8		3-1/2		1-1/4		0.045	
17862516A	17916	17862516AW	13377	5/8		.6250	5/8		3-1/2		1-1/4		0.060	
17862517A	17917	17862517AW	13379	5/8		.6250	5/8		3-1/2		1-1/4		0.090	
17862518A	17918	17862518AW	13381	5/8		.6250	5/8		3-1/2		1-1/4		0.125	
17862900A	17981				16	.6299		16		92		32		
17862903A	17982				16	.6299		16		92		32		1.000
17862910A	18031				16	.6299		16		150		75		
17870800A	17983				18	.7087		18		92		32		
17870803A	17984				18	.7087		18		92		32		1.000
17875000A	17825	17875000AW	10656	3/4		.7500	3/4		3		1			
17875002A	18011	17875002AW	13385	3/4		.7500	3/4		3		1		0.015	
17875004A	17887	17875004AW	13387	3/4		.7500	3/4		3		1		0.030	
17875005A	17888	17875005AW	13389	3/4		.7500	3/4		3		1		0.045	
17875010A	17826	17875010AW	13394	3/4		.7500	3/4		4		1-1/2			
17875012A	18012	17875012AW	13395	3/4		.7500	3/4		4		1-1/2		0.015	
17875014A	17889	17875014AW	13396	3/4		.7500	3/4		4		1-1/2		0.030	
17875015A	17890	17875015AW	13397	3/4		.7500	3/4		4		1-1/2		0.045	
17875016A	17919	17875016AW	13398	3/4		.7500	3/4		4		1-1/2		0.060	
17875017A	17920	17875017AW	13399	3/4		.7500	3/4		4		1-1/2		0.090	
17875018A	17921	17875018AW	13402	3/4		.7500	3/4		4		1-1/2		0.125	
17878700A	17986				20	.7874		20		104		38		
17878703A	17987				20	.7874		20		104		38		1.000
17878710A	18032				20	.7874		20		150		75		
17898400A	17988				25	.9843		25		104		38		
17898403A	17989				25	.9843		25		104		38		1.000
17810000A	17827	17810000AW	13403	1		1.0000	1		4		1			
17810010A	17828	17810010AW	13404	1		1.0000	1		4		1-1/2			
17810012A	18015	17810012AW	13405	1		1.0000	1		4		1-1/2		0.015	
17810014A	17895	17810014AW	13406	1		1.0000	1		4		1-1/2		0.030	
17810015A	17896	17810015AW	13407	1		1.0000	1		4		1-1/2		0.045	
17810016A	17922	17810016AW	13408	1		1.0000	1		4		1-1/2		0.060	
17810017A	17923	17810017AW	13420	1		1.0000	1		4		1-1/2		0.090	
17810018A	17924	17810018AW	13421	1		1.0000	1		4		1-1/2		0.125	



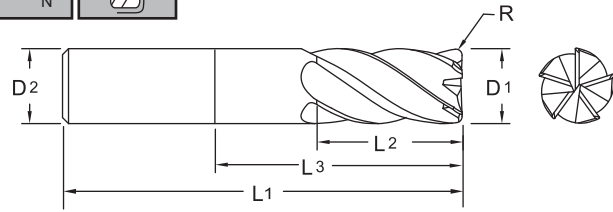
End Mills



TuffCut® XR Series 178N



5
Flute



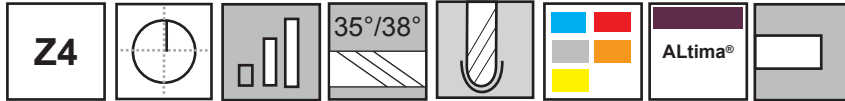
ALtima®		Diameter		Shank	OAL	Flute Length		Neck Length	Corner Radius
Tool No.	EDP	D1		D2 h6	L1	L2	L3	R	
		Inch	Decimal	Inch	Inch	Inch	Inch	Inch	
17825022NA	17833	1/4	.2500	1/4	4	3/4	2-1/8	0.015	
17825024NA	17834	1/4	.2500	1/4	4	3/4	2-1/8	0.030	
17831222NA	17841	5/16	.3125	5/16	4	1	2-1/8	0.015	
17831224NA	17842	5/16	.3125	5/16	4	1	2-1/8	0.030	
17837522NA	17849	3/8	.3750	3/8	4	1	2-1/8	0.015	
17837524NA	17850	3/8	.3750	3/8	4	1	2-1/8	0.030	
17837532NA	17851	3/8	.3750	3/8	6	1-1/4	3-3/8	0.015	
17837534NA	17852	3/8	.3750	3/8	6	1-1/4	3-3/8	0.030	
17843722NA	17859	7/16	.4375	7/16	4	1-1/4	2-1/8	0.015	
17843724NA	17860	7/16	.4375	7/16	4	1-1/4	2-1/8	0.030	
17843732NA	17861	7/16	.4375	7/16	6	1-1/2	3-3/8	0.015	
17843734NA	17862	7/16	.4375	7/16	6	1-1/2	3-3/8	0.030	
17850022NA	17925	1/2	.5000	1/2	4	1-1/4	2-1/8	0.015	
17850024NA	17870	1/2	.5000	1/2	4	1-1/4	2-1/8	0.030	
17850032NA	17871	1/2	.5000	1/2	5	1-3/8	3-1/8	0.015	
17850034NA	17872	1/2	.5000	1/2	5	1-3/8	3-1/8	0.030	
17850042NA	17873	1/2	.5000	1/2	6	1-1/2	4-1/8	0.015	
17850044NA	17874	1/2	.5000	1/2	6	1-1/2	4-1/8	0.030	
17862522NA	18008	5/8	.6250	5/8	4	1-1/2	2-1/8	0.015	
17862524NA	17881	5/8	.6250	5/8	4	1-1/2	2-1/8	0.030	
17862525NA	17882	5/8	.6250	5/8	4	1-1/2	2-1/8	0.045	
17862532NA	18009	5/8	.6250	5/8	5	1-3/4	3-1/8	0.015	
17862534NA	17883	5/8	.6250	5/8	5	1-3/4	3-1/8	0.030	
17862535NA	17884	5/8	.6250	5/8	5	1-3/4	3-1/8	0.045	
17862542NA	18010	5/8	.6250	5/8	6	2	4	0.015	
17862544NA	17885	5/8	.6250	5/8	6	2	4	0.030	
17862545NA	17886	5/8	.6250	5/8	6	2	4	0.045	
17875022NA	18013	3/4	.7500	3/4	5	1-7/8	3	0.015	
17875024NA	17891	3/4	.7500	3/4	5	1-7/8	3	0.030	
17875025NA	17892	3/4	.7500	3/4	5	1-7/8	3	0.045	
17875032NA	18014	3/4	.7500	3/4	6	2-1/4	4	0.015	
17875034NA	17893	3/4	.7500	3/4	6	2-1/4	4	0.030	
17875035NA	17894	3/4	.7500	3/4	6	2-1/4	4	0.045	
17810022NA	18016	1	1.0000	1	5	2-1/4	3	0.015	
17810024NA	17897	1	1.0000	1	5	2-1/4	3	0.030	
17810025NA	17898	1	1.0000	1	5	2-1/4	3	0.045	
17810032NA	18017	1	1.0000	1	6	3	4	0.015	
17810034NA	17899	1	1.0000	1	6	3	4	0.030	
17810035NA	17900	1	1.0000	1	6	3	4	0.045	

Inch	
D1	Tolerance
1/4	+.000/-0.002
> 1/4-1.0	+.000/-0.003

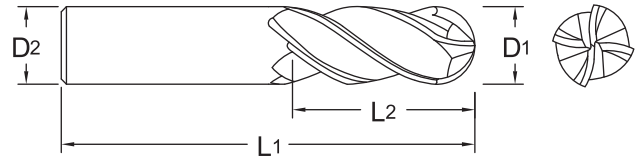
Metric (mm)	
D1	Tolerance (h6)
.2363 - .3937	+0/-0.00035
.3938 - .7087	+0/-0.00043
.7088 - 1.000	+0/-0.00051



TuffCut® XR Series 179



4
Flute
Ball



ALtima®		Diameter			Shank		OAL		Flute Length	
		D1			D2 h6		L1		L2	
Tool No.	EDP	Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm
17905900A	18272		1.5	.0591		3		38		3.0
17906250A	18284	1/16		.0625	1/8		1-1/2		1/8	
17907810A	18286	5/64		.0781	1/8		1-1/2		5/32	
17907870A	18274		2	.0787		3		38		4.0
17909370A	18288	3/32		.0937	1/8		1-1/2		3/16	
17909840A	18276		2.5	.0984		3		38		5.0
17911800A	18018		3	.1181		6		57		8.0
17911803A	18278		3	.1181		3		38		6.0
17912500A	18034	1/8		.1250	1/8		1-1/2		1/4	
17912510A	18035	1/8		.1250	1/8		1-1/2		3/8	
17913700A	18280		3.5	.1378		6		63		7.0
17915700A	18019		4	.1575		6		57		11.0
17917700A	18282		4.5	.1772		6		63		9.0
17918700A	18038	3/16		.1875	3/16		2		3/8	
17918710A	18039	3/16		.1875	3/16		2		5/8	
17919600A	18020		5	.1968		6		57		13.0
17923600A	18021		6	.2362		6		57		13.0
17925000A	18042	1/4		.2500	1/4		2		3/8	
17925010A	18043	1/4		.2500	1/4		2-1/2		3/4	
17925020A	18063	1/4		.2500	1/4		4		1/2	
17931200A	18045	5/16		.3125	5/16		2		1/2	
17931210A	18046	5/16		.3125	5/16		2-1/2		13/16	
17931500A	18022		8	.3150		8		63		19.0
17937500A	18048	3/8		.3750	3/8		2		1/2	
17937510A	18049	3/8		.3750	3/8		2-1/2		7/8	
17937520A	18064	3/8		.3750	3/8		4		9/16	
17939300A	18023		10	.3937		10		72		22.0
17947200A	18024		12	.4724		12		83		26.0
17950000A	18054	1/2		.5000	1/2		2-1/2		5/8	
17950010A	18055	1/2		.5000	1/2		3		1-1/4	
17950020A	18065	1/2		.5000	1/2		5		5/8	
17962510A	18058	5/8		.6250	5/8		3-1/2		1-1/4	
17962520A	18066	5/8		.6250	5/8		6		3/4	
17962900A	18059		16	.6299		16		92		32.0
17975010A	18060	3/4		.7500	3/4		4		1-1/2	
17975020A	18067	3/4		.7500	3/4		6		1	
17910010A	18062	1		1.0000	1		4		1-1/2	
17910020A	18068	1		1.0000	1		6		1-1/4	

Inch	
D1	Tolerance
1/16-1/4	+0.000/-0.002
> 1/4-1.0	+0.000/-0.003

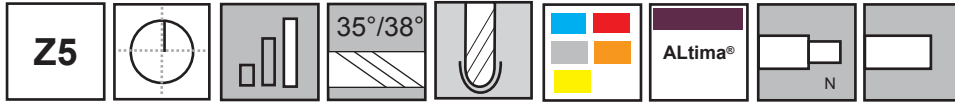
Metric (mm)	
D1	Tolerance h10
1.50-3.00	+0.000/-0.040
>3.00-6.00	+0.000/-0.048
>6.00-10.00	+0.000/-0.058
>10.00-16.00	+0.000/-0.070

Inch	
D2	Tolerance (h6)
.1182 - .2362	+0/-0.00031
.2363 - .3937	+0/-0.00035
.3938 - .7087	+0/-0.00043
.7088 - 1.000	+0/-0.00051

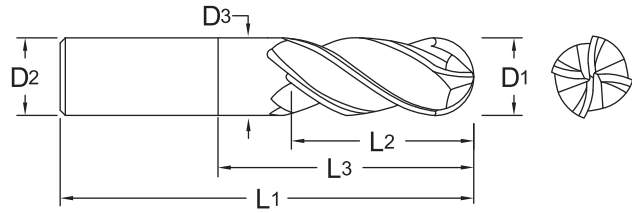
Metric (mm)	
D2	Tolerance (h6)
3.0	+0/-0.006
3.01 - 6.0	+0/-0.008
6.01 - 10.0	+0/-0.009
10.01 - 16.0	+0/-0.011

End Mills

TuffCut® XR Series 179L



4
Flute
Ball



ALtima®		Diameter		Shank	Neck Dia.	OAL	Flute Length	Neck Length
Tool No.	EDP	D1 h10		D2 h6	D3	L1	L2	L3
		mm	Decimal	mm	mm	mm	mm	mm
179L1181N5A	18290	3	.1181	6	2.9	75	4.5	17
179L1575N5A	18292	4	.1575	6	3.9	75	6.0	22
179L1968N5A	18294	5	.1968	6	4.9	75	7.5	27
179L2362N5A	18296	6	.2362	6	5.8	101	9.0	32
179L3150N5A	18298	8	.3150	8	7.6	101	12.0	42
179L3937N5A	18302	10	.3937	10	9.6	127	15.0	52
179L4724N5A	18304	12	.4724	12	11.4	152	18.0	62
179L6299N5A	18306	16	.6299	16	15.2	152	24.0	82

Metric (mm)	
D1	Tolerance h10
3.00	+0.00/-0.040
>3.00-6.00	+0.00/-0.048
>6.00-10.00	+0.00/-0.058
>10.00-16.00	+0.00/-0.070

Metric (mm)	
D2	Tolerance (h6)
6.0	+0/-0.008
6.01 - 10.0	+0/-0.009
10.01 - 16.0	+0/-0.011

Inch Sizes Available upon request.



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