

# 2-FLUTE END MILLS

## E12

### 2 Helical Flutes

For plunging, slotting, contouring and heavy peripheral cuts



E12 • Radius

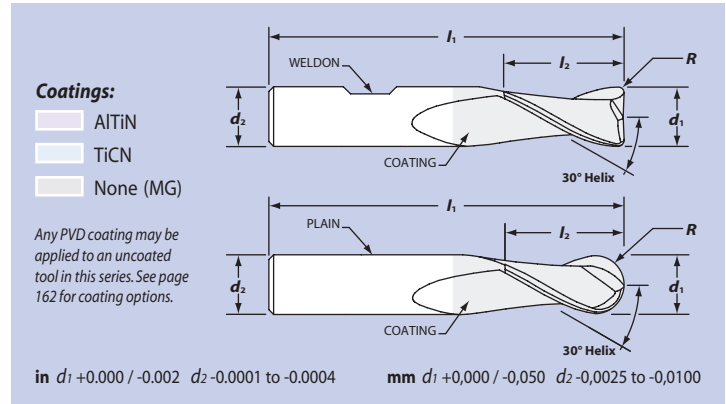


E12 • Square



E12B • Ball

Two-flute end mills are center cutting and designed for plunging, slotting, contouring and increased chip clearance at higher feed rates in heavy peripheral cuts.



	AITiN Spector	TiCN Accelerator	MG Uncoated
Carbon & tool steels ≤ 48 HRC	✓✓	✓	✓
Stainless steels	✓	✓	
Cast irons	✓✓	✓	✓
Aluminum and non-ferrous	✓	✓✓✓	✓✓

✓ Suitable    ✓✓ Good    ✓✓✓ Recommended

## End designs

- Variety of corner radii available
- Square end for general machining and finishing
- Ball nose styles for contouring
- Center cutting

## Shank designs

- Precision shanks fit all collets and most shrink-fit systems
- Many sizes offered with flats for end mill holders

## Multiple lengths

- Long, extra long and extreme lengths for deep cavity milling
- Stub length for extra rigidity



### E12 Sets

Style	EDP Number	List Price
AITiN	33686	177.34
TiCN	33654	176.56
MG	33650	144.82

### E12B Sets

Style	EDP Number	List Price
AITiN	33687	210.94
TiCN	33667	209.90
MG	33660	176.56

Contains one each of: 1/8, 3/16, 1/4, 5/16, 3/8, 1/2

# GENERAL PURPOSE E12 END MILLS

For general milling applications

## E12

### Inch sizes



Inch							Standard					
$d_1$ Cutter Dia	$d_2$ Shank Dia	$l_2$ Length of Cut	$l_1$ Overall Length	$R$ Corner Radius	Shank Style	Style Code	AlTiN EDP Number	List Price	TiCN EDP Number	List Price	MG EDP Number	List Price
1/64	1/8	1/32	1-1/2	Square	Plain	SR	90655	13.16			90638	10.47
		3/64	1-1/2	Square	Plain	RR	90656	13.74			90639	11.05
1/32	1/8	1/16	1-1/2	Square	Plain	SR	38923	11.78			34696	9.09
		1/16	1-1/2	Ball	Plain	SR	30372	16.85			31601	14.16
		3/32	1-1/2	Square	Plain	RR	30509	12.35	34602	12.05	30601	9.66
		3/32	1-1/2	Ball	Plain	RR	30303	16.85			30801	14.16
		1/8	1-1/2	Square	Plain	LR	90657	12.20			90652	9.51
3/64	1/8	3/32	1-1/2	Square	Plain	SR	39093	11.55			34699	8.86
		3/32	1-1/2	Ball	Plain	SR	30373	16.85			31602	14.16
		9/64	1-1/2	Square	Plain	RR	35603	11.97	34603	11.67	30603	9.28
1/16	1/8	9/64	1-1/2	Ball	Plain	RR	30302	16.85			30803	14.16
		1/8	1-1/2	Square	Plain	SR	39104	11.55			31403	8.86
		1/8	1-1/2	Ball	Plain	SR	30374	15.34			31603	12.75
		3/16	1-1/2	Square	Plain	RR	30336	11.97	34604	11.67	30605	9.28
5/64	1/8	3/16	1-1/2	Ball	Plain	RR	30433	15.55			30805	12.80
		1/4	1-1/2	Square	Plain	LR	90658	12.20			90653	9.51
		1/4	1-1/2	Square	Plain	RR	30337	12.35			30607	9.66
3/32	1/8	1/4	1-1/2	Ball	Plain	RR	30349	15.55			30807	12.80
		3/16	1-1/2	Square	Plain	SR	39105	11.55			31405	8.86
		3/16	1-1/2	Ball	Plain	SR	30375	14.61			31605	12.02
		3/8	1-1/2	Square	Plain	RR	30338	11.97	34606	11.67	30609	9.28
7/64	1/8	3/8	1-1/2	Ball	Plain	RR	30350	14.82			30809	12.20
		3/8	1-1/2	Square	Plain	RR	30339	12.35			30611	9.66
		3/8	1-1/2	Ball	Plain	RR	30351	14.82			30811	12.20
1/8	1/8	1/4	1-1/2	Square	Plain	SR	90088	11.18			31407	8.78
		1/4	1-1/2	Ball	Plain	SR	31956	13.73			31607	11.15
		1/2	1-1/2	Square	Plain	RR	96342	11.23	34608	11.23	30613	9.00
		1/2	1-1/2	.015	Plain	RR	34071	14.04			39550	14.50
		1/2	1-1/2	Ball	Plain	RR	30993	13.83	34708	13.83	30813	11.46
		5/8	2	Square	Plain	LL	62093	16.80			96483	13.67
		5/8	2	Ball	Plain	LL	37880	19.24			37876	15.98
		3/4	2-1/4	Square	Plain	LL	36610	16.43			37608	14.22
		3/4	2-1/4	Ball	Plain	LL	30385	20.07			37808	17.02
9/64	3/16	1	3	Square	Plain	XX	34015	22.26			34008	19.33
		1	3	Ball	Plain	XX	31291	27.09			34208	23.17
5/32	3/16	9/16	2	Square	Plain	RR	30344	16.59			30615	13.44
		9/16	2	Ball	Plain	RR	90177	20.38			30815	16.92
11/64	3/16	5/16	2	Square	Plain	SR	39129	15.50			31409	12.89
		5/16	2	Ball	Plain	SR	30403	18.25			31609	15.50
		9/16	2	Square	Plain	RR	30503	16.59			30617	13.44
3/16	3/16	9/16	2	Ball	Plain	RR	30354	19.76			30817	16.39
		5/8	2	Square	Plain	RR	30345	16.59			30619	13.44
		3/8	2	Square	Plain	SR	39131	14.92			31411	12.11
		3/8	2	Ball	Plain	SR	30378	17.58			31611	14.56
		5/8	2	Square	Plain	RR	30554	15.50	34612	15.50	30621	12.67
		5/8	2	.020	Plain	RR	34072	18.46			39553	17.62
		5/8	2	.030	Plain	RR	34073	18.46			39554	17.62
		5/8	2	Ball	Plain	RR	90087	18.10	34712	18.10	30821	15.08
		3/4	2-1/2	Square	Plain	LL	36619	22.26			37612	18.22
		3/4	2-1/2	Ball	Plain	LL	30386	23.97			37812	21.80
		1	4	Square	Plain	LE	62094	30.00			62088	24.67
		1	4	Ball	Plain	LE	37881	33.85			94365	29.38
		1-1/8	3	Square	Plain	XX	34023	25.69			34012	22.00
		1-1/8	3	Ball	Plain	XX	90081	30.32			34212	26.35

**Style Code Reference**  
 LE—Long LOC, Extreme OAL  
 LL—Long LOC, Long OAL  
 LR—Long LOC, Standard OAL  
 RR—Regular LOC, Regular OAL  
 SR—Short LOC, Regular OAL  
 XX—X-Long LOC, X-Long OAL

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# GENERAL PURPOSE E12 END MILLS

For general milling applications

## E12

### Inch sizes



Inch • Continued

Standard

$d_1$ Cutter Dia	$d_2$ Shank Dia	$l_2$ Length of Cut	$l_1$ Overall Length	R Corner Radius	Shank Style	Style Code	AlTiN EDP Number	List Price	TiCN EDP Number	List Price	MG EDP Number	List Price
13/64	1/4	5/8	2-1/2	Square	Plain	RR	97907	21.06			30623	16.78
7/32	1/4	7/16	2	Square	Plain	SS	39153	19.45			31413	14.49
		5/8	2-1/2	Square	Plain	RR	30348	21.06			30625	16.78
		5/8	2-1/2	Ball	Plain	RR	30355	25.01			30825	20.50
15/64	1/4	3/4	2-1/2	Square	Plain	RR	30510	21.06			30627	16.78
		1/2	2	Square	Plain	SS	39154	18.98			31415	14.22
		1/2	2	Ball	Plain	SS	30563	20.07			31615	17.11
		3/4	2-1/2	Square	Plain	RR	30553	18.93	34616	18.93	30629	14.89
		3/4	2-1/2	Square	Weldon	RR	39250	20.49			39256	16.57
		3/4	2-1/2	.020	Plain	RR	34074	23.19			39556	19.29
		3/4	2-1/2	.030	Plain	RR	34075	23.19			39557	19.29
		3/4	2-1/2	Ball	Plain	RR	30994	23.76	34716	23.76	30829	19.45
		1	4	Square	Plain	LX	62095	34.68			62089	28.24
		1	4	Ball	Plain	LX	37882	39.68			37877	33.05
		1-1/8	3	Square	Plain	LL	36645	27.61			37616	22.44
		1-1/8	3	Ball	Plain	LL	30387	34.42			37816	28.97
		1-1/2	4	Square	Plain	XX	34035	33.59			34016	27.33
		1-1/2	4	Ball	Plain	XX	90082	39.42			34216	32.52
		1-1/2	6	Square	Plain	XE	39203	45.03			31063	37.67
1-1/2	6	Ball	Plain	XE	34168	50.08			31263	42.43		
17/64	5/16	3/4	2-1/2	Square	Plain	RR	30511	32.19			30631	26.20
9/32	5/16	3/4	2-1/2	Square	Plain	RR	30504	32.19			30633	26.20
		3/4	2-1/2	Ball	Plain	RR	30356	37.18			30833	31.03
19/64	5/16	13/16	2-1/2	Square	Plain	RR	30512	32.19			30635	26.20
5/16	5/16	1/2	2	Square	Plain	SS	39155	26.26			31417	19.42
		1/2	2	Ball	Plain	SS	30380	29.69			31617	24.28
		13/16	2-1/2	Square	Plain	RR	30557	26.99	34620	26.94	30637	21.04
		13/16	2-1/2	Square	Weldon	RR	39251	28.55			39257	22.80
		13/16	2-1/2	.020	Plain	RR	34076	30.84			39560	25.44
		13/16	2-1/2	.030	Plain	RR	34077	30.84			39561	25.44
		13/16	2-1/2	Ball	Plain	RR	30562	31.98	34720	31.93	30837	25.82
		1-1/8	3	Square	Plain	LL	36640	37.60			37620	29.89
		1-1/8	3	Ball	Plain	LL	20561	43.52			37820	35.84
		1-5/8	4	Square	Plain	XX	34036	43.00			34020	35.56
		1-5/8	4	Ball	Plain	XX	31292	53.40			34220	43.74
11/32	3/8	1	2-1/2	Square	Plain	RR	30331	38.90			30641	31.67
		1	2-1/2	Ball	Plain	RR	30357	43.73			30841	36.15
3/8	3/8	5/8	2	Square	Plain	SS	39156	31.62			31419	24.22
		5/8	2	Ball	Plain	SS	30564	34.06			31619	28.53
		1	2-1/2	Square	Plain	RR	30556	32.50	34624	32.24	30645	26.22
		1	2-1/2	Square	Weldon	RR	39252	33.90			39258	28.14
		1	2-1/2	.020	Plain	RR	34104	37.23			36808	30.34
		1	2-1/2	.020	Weldon	RR	34078	39.00			39564	32.26
		1	2-1/2	.030	Plain	RR	34105	37.23			36809	30.34
		1	2-1/2	.030	Weldon	RR	34079	39.00			39565	32.26
		1	2-1/2	Ball	Plain	RR	30995	37.96	34724	37.65	30845	31.39
		1	4	Square	Plain	RX	62097	50.49			62091	41.09
		1	4	Ball	Plain	RX	37884	58.14			37879	48.39
		1-1/8	3	Square	Plain	LL	36646	43.37			37624	34.89
		1-1/8	3	Ball	Plain	LL	30390	51.38			37824	44.23
		1-1/2	6	Square	Plain	LE	30470	69.89			31035	59.80
		1-1/2	6	Ball	Plain	LE	34170	77.32			31235	67.15
		1-3/4	4	Square	Plain	XX	34037	49.14			34024	40.82
		1-3/4	4	Ball	Plain	XX	31293	58.66			34224	48.39

E12 end mills with Weldon® flats are available by request on items not already shown as standard with this feature. See page 160 for modification charges.

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# GENERAL PURPOSE E12 END MILLS

For general milling applications

## E12

### Inch sizes



#### Style Code Reference

LE—Long LOC, Extreme OAL  
 LL—Long LOC, Long OAL  
 LX—Long LOC, X-Long OAL  
 RL—Regular LOC, Long OAL  
 RR—Regular LOC, Regular OAL  
 RX—Regular LOC, X-Long OAL  
 SS—Short LOC, Short OAL  
 XE—X-Long LOC, Extreme OAL  
 XX—X-Long LOC, X-Long OAL

Inch • Continued

Standard

$d_1$ Cutter Dia	$d_2$ Shank Dia	$l_2$ Length of Cut	$l_1$ Overall Length	$R$ Corner Radius	Shank Style	Style Code	AITIN EDP Number	List Price	TiCN EDP Number	List Price	MG EDP Number	List Price
13/32	7/16	1	2-3/4	Square	Plain	RR	30332	46.96			30649	38.71
7/16	7/16	1	2-3/4	Square	Plain	RR	99467	42.38	34629	42.12	30672	33.89
		1	2-3/4	Ball	Plain	RR	30362	49.24			30879	40.28
		2	4	Square	Plain	LL	99468	68.12			37628	56.78
		2	4	Ball	Plain	LL	30391	78.99			37828	67.26
		3	6	Square	Plain	XX	34038	87.62			34028	75.44
		3	6	Ball	Plain	XX	31294	101.40			34228	87.03
15/32	1/2	1	3	Square	Plain	RR	30333	61.52			30657	51.22
		5/8	2-1/2	Square	Plain	SS	39158	50.18			31423	40.84
		5/8	2-1/2	Ball	Plain	SS	31630	53.46			31623	48.00
		1	3	Square	Plain	RR	30552	51.95	34632	51.27	30661	42.89
		1	3	Square	Weldon	RR	39253	53.92			39259	45.13
		1	3	.020	Weldon	RR	34106	60.42			36810	46.47
		1	3	.020	Weldon	RR	34080	62.30			39568	48.71
		1	3	.030	Plain	RR	34107	60.42			36811	46.47
		1	3	.030	Weldon	RR	34081	62.30			39569	48.71
		1	3	.060	Plain	RR	34190	60.42			36812	46.47
		1	3	.060	Weldon	RR	34082	62.30			39571	48.71
		1	3	Ball	Plain	RR	97921	64.74	34732	63.86	30861	55.31
		1	4	Square	Plain	RL	62098	73.32			62092	60.67
		1	4	Ball	Plain	RL	37885	81.48			90503	68.45
		1-1/2	6	Square	Plain	LX	39205	101.19			31047	87.33
		1-1/2	6	Ball	Plain	LX	34172	110.66			31247	96.66
		2	4	Square	Plain	LL	36647	72.49			37632	60.67
		2	4	Ball	Plain	LL	30392	82.26			37832	68.51
		3	6	Square	Plain	XX	34039	100.88			34032	87.33
		3	6	Ball	Plain	XX	31295	113.00			34232	96.96
9/16	9/16	1-1/4	3-1/2	Square	Plain	RR	30505	89.39			30663	76.00
		1-1/4	3-1/2	Ball	Plain	RR	30248	100.36			30863	86.76
5/8	5/8	1-1/4	3-1/2	Square	Plain	RR	30532	97.50			30665	82.67
		1-1/4	3-1/2	Square	Weldon	RR	39254	99.84			39260	85.47
		1-1/4	3-1/2	Ball	Plain	RR	30366	109.25			30865	94.00
		2	6	Square	Plain	LX	39206	146.80			39198	123.93
		2	6	Ball	Plain	LX	34173	165.41			31226	141.48
		2-1/4	5	Square	Plain	LL	36648	141.96			37640	116.78
		2-1/4	5	Ball	Plain	LL	30393	166.35			37840	147.27
		3	6	Square	Plain	XX	34043	146.38			34040	123.93
3	6	Ball	Plain	XX	31296	167.08			34240	141.91		
3/4	3/4	1-1/2	4	Square	Plain	RR	30700	142.69			30669	121.11
		1-1/2	4	Square	Weldon	RR	39255	145.70			39261	124.31
		1-1/2	4	Ball	Plain	RR	30872	156.31			30869	137.96
		2	6	Square	Plain	LX	39207	230.41			39199	192.80
		2	6	Ball	Plain	LX	34174	266.55			31228	223.13
		2-1/4	5	Square	Plain	LL	36649	186.21			37648	155.56
		2-1/4	5	Ball	Plain	LL	30396	224.02			37848	202.21
		3	6	Square	Plain	XX	34044	224.69			34048	192.80
3	6	Ball	Plain	XX	31297	256.78			34248	229.50		
1	1	1-1/2	4	Square	Plain	RR	30679	215.02			30677	187.78
		1-1/2	4	Ball	Plain	RR	30369	266.03			30877	237.62
		2-1/4	5	Square	Plain	LL	36650	346.06			37664	295.18
		2-1/4	5	Ball	Plain	LL	30397	416.21			37864	369.29
		3	6	Square	Plain	XX	34045	373.36			34064	329.11
		3	6	Ball	Plain	XX	31298	420.78			34264	382.06

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# GENERAL PURPOSE E12 END MILLS

For general milling applications

## E12

### Metric sizes



Metric E12 end mills with DIN 6535 HB (Weldon®) flats are available by request. See page 160 for modification charges.

Metric						Standard			
$d_1$ Cutter Dia	$d_2$ Shank Dia	$l_2$ Length of Cut	$l_1$ Overall Length	$R$ Corner Radius	Style Code	AITIN EDP Number	List Price	MG EDP Number	List Price
0,3	3	0,9	38	Square	RR			31791	24.10
0,4	3	1,2	38	Square	RR			31792	13.21
0,5	3	1,5	38	Square	RR			31793	12.55
0,6	3	1,8	38	Square	RR			31794	11.09
0,7	3	2,1	38	Square	RR			31795	10.40
0,8	3	2,4	38	Square	RR			31796	10.40
0,9	3	2,7	38	Square	RR			31797	9.51
1	3	2	38	Square	SR	62288	11.78	38866	9.09
		2	38	Ball	SR	62673	18.12	39071	15.96
		3	38	Square	RR	99079	12.20	31431	9.51
		3	38	Ball	RR	99080	18.26	32551	16.10
1,5	3	3	38	Square	SR	62289	11.55	38867	8.86
		3	38	Ball	SR	62674	17.74	39072	15.58
		4,5	38	Square	RR	62455	11.97	31432	9.28
		4,5	38	Ball	RR	62459	17.18	32552	15.02
		6	38	Square	RR	37980	12.20	38602	9.51
		6	38	Ball	RR	62579	17.74	38611	15.58
2	3	4	38	Square	SR	62290	11.55	38868	8.86
		4	38	Ball	SR	62675	13.73	39073	11.57
		6,3	38	Square	RR	99081	11.97	31433	9.28
		6,3	38	Ball	RR	99082	13.85	32553	11.69
		9	38	Square	RR	37981	12.20	38603	9.51
		9	38	Ball	RR	62580	15.05	38612	12.89
2,5	3	5	38	Square	SR	62291	11.55	38869	8.86
		9,5	38	Square	RR	37982	11.97	31434	9.28
		9,5	38	Ball	RR	62581	14.73	32554	12.57
3	3	6	38	Square	SR	62292	10.94	38870	8.78
		6	38	Ball	SR	62677	12.41	39075	10.25
		9	38	Square	RR	99093	11.16	36709	9.00
		12	38	Square	RR	32601	11.38	31435	9.22
		12	38	0,3	RR	38620	16.88	37768	14.72
		12	38	Ball	RR	32600	14.00	32555	11.84
		19	57	Square	LL	62194	17.42	30153	14.22
		19	57	Ball	LL	62625	20.09	39114	16.89
		25	75	Square	XX	62182	23.26	30001	19.22
		25	75	Ball	XX	62649	26.65	32365	22.61
3,5	4	7	50	Square	SR	62293	15.80	38871	12.56
		14	50	Square	RR	32603	16.35	31436	13.11
		14	50	Ball	RR	62582	19.94	32556	16.70
4	4	8	50	Square	SR	62294	15.24	38872	12.00
		8	50	Ball	SR	62679	17.45	39077	14.21
		11	50	Square	RR	36756	15.80	36711	12.56
		11	50	0,4	RR	38621	21.02	37769	17.78
		14	50	Square	RR	99357	16.46	31437	13.22
		14	50	Ball	RR	32602	19.18	32557	15.94
		19	63	Square	LL	62195	21.63	30155	17.67
		19	63	Ball	LL	62626	24.61	39115	20.65
		31	75	Square	XX	62183	25.01	30004	20.33
		31	75	Ball	XX	62650	28.56	32368	23.88
4,5	5	16	50	Square	RR	37983	17.88	31438	13.56
		16	50	Ball	RR	62583	21.53	32558	17.21

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# GENERAL PURPOSE E12 END MILLS

For general milling applications

Metric • Continued						Standard			
d <sub>1</sub> Cutter Dia	d <sub>2</sub> Shank Dia	l <sub>2</sub> Length of Cut	l <sub>1</sub> Overall Length	R Corner Radius	Style Code	AITiN EDP Number	List Price	MG EDP Number	List Price
5	5	10	50	Square	SR	62296	18.21	38874	13.89
		10	50	Ball	SR	62681	20.87	39079	16.55
		13	50	Square	RR	36757	18.43	36713	14.11
		13	50	0,5	RR	38622	23.38	37770	19.06
		16	50	Square	RR	32604	18.76	31439	14.44
		16	50	Ball	RR	99083	22.14	32559	17.82
		19	63	Square	LL	62196	25.17	30156	19.89
		19	63	Ball	LL	62627	29.20	39116	23.92
		31	100	Square	XX	62184	33.74	30231	25.78
		31	100	Ball	XX	62651	38.64	39123	30.68
6	6	12	54	Square	SS	37176	18.63	39240	14.31
		12	54	Ball	SS	37501	21.21	39466	16.89
		13	57	Square	RR	36758	19.12	36715	14.64
		13	57	0,3	RR	38623	23.80	37771	19.32
		13	57	0,5	RR	38624	23.80	37772	19.32
		19	63	Square	RR	37984	20.36	31440	15.44
		19	63	Ball	RR	62584	23.88	32560	18.96
		29	75	Square	LL	62197	27.14	30010	21.42
		29	75	Ball	LL	62628	30.37	32374	24.65
		38	100	Square	XX	62185	34.17	30234	26.73
38	100	Ball	XX	62652	38.75	39125	31.31		
7	7	16	60	Square	RR	36759	25.78	36717	20.22
	8	19	63	Square	RR	37985	29.00	31441	23.04
		19	63	Ball	RR	62585	34.00	32561	28.04
8	8	14	58	Square	SS	37183	26.14	39241	20.58
		14	58	Ball	SS	37502	32.77	39467	27.21
		19	63	Square	RR	36760	27.52	36719	21.56
		19	63	0,5	RR	38625	31.92	37773	25.96
		19	63	1,0	RR	38626	31.92	37774	25.96
		19	63	1,5	RR	38627	31.92	37775	25.96
		20	63	Square	RR	31492	29.69	31442	23.73
		20	63	Ball	RR	99085	33.73	32562	27.77
		20	100	Square	RX	31878	47.54	30265	38.58
		20	100	Ball	RX	37441	54.32	37284	45.36
		29	75	Square	LL	62198	37.96	30013	31.04
		29	75	Ball	LL	62629	42.52	32377	35.60
41	100	Square	XX	62186	45.67	30235	36.71		
41	100	Ball	XX	62653	52.15	39126	43.19		
9	9	19	67	Square	RR	36761	40.12	36721	27.04
	10	22	72	Square	RR	37986	43.32	31443	32.56
		22	72	Ball	RR	62586	48.17	32563	37.41
10	10	16	66	Square	SS	37184	39.89	39242	29.89
		16	66	Ball	SS	37503	44.45	39468	34.45
		22	72	Square	RR	36762	41.76	36723	31.00
		22	72	0,5	RR	38628	45.88	37776	35.12
		22	72	1,0	RR	38629	45.88	37777	35.12
		22	72	1,5	RR	38630	45.88	37778	35.12
		25	72	Square	RR	99358	44.27	31444	33.51
		25	72	Ball	RR	62587	49.26	32564	38.50
		25	100	Square	RX	31879	60.18	30266	45.82
		25	100	Ball	RX	37442	68.98	37285	54.62

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Metric • Continued						Standard			
d <sub>1</sub> Cutter Dia	d <sub>2</sub> Shank Dia	l <sub>2</sub> Length of Cut	l <sub>1</sub> Overall Length	R Corner Radius	Style Code	AITiN EDP Number	List Price	MG EDP Number	List Price
10	10	40	88	Square	LL	37174	53.57	30223	40.73
		40	88	Ball	LL	37504	58.93	39469	46.09
		45	100	Square	XX	62187	61.36	30016	47.00
		45	100	Ball	XX	62654	67.79	32380	53.43
		11	11	26	83	Square	RR	36763	50.40
12	12	19	73	Square	SS	37251	51.64	39243	41.64
		25	76	Square	RR	99359	55.03	31445	44.71
		25	76	Ball	RR	99356	61.70	32565	51.38
		26	83	Square	RR	36764	53.94	36725	42.78
		26	83	0,5	RR	38631	57.52	37779	46.36
		26	83	1,0	RR	38632	57.52	37780	46.36
		26	83	1,5	RR	38633	57.52	37781	46.36
		26	83	Ball	RR	37507	60.63	39471	49.47
		50	100	Square	LL	62200	73.01	30019	59.89
		50	100	Ball	LL	62631	80.30	32383	67.18
14	14	75	150	Square	XX	62188	105.29	30022	86.33
		75	150	Ball	XX	62655	122.58	32386	103.62
		26	83	Square	RR	36765	88.41	36727	75.33
		32	83	Ball	RR	62589	102.46	34565	89.38
		57	125	Square	LL	62201	119.61	30158	100.89
		75	150	Square	XX	62189	138.97	30025	116.89
		25	82	Square	SS	62304	96.08	38880	83.00
16	16	32	89	Square	RR	37989	102.77	31447	88.73
		32	89	Ball	RR	62590	115.93	32567	101.89
		32	92	Square	RR	36766	101.28	36729	86.84
		57	125	Square	LL	62202	145.54	30159	126.62
		57	125	Ball	LL	62633	170.89	39119	151.97
		75	150	Square	XX	62190	156.43	30028	134.11
18	18	32	92	Square	RR	36767	133.96	36730	120.04
		57	125	Square	LL	62203	179.78	30228	161.62
		75	150	Square	XX	62191	206.44	30031	185.04
20	20	38	100	Square	RR	37991	178.27	31449	156.71
		38	104	Square	RR	36768	171.59	36731	149.27
		38	104	Ball	RR	36735	213.73	36733	192.17
		57	125	Square	LL	62204	207.82	30229	181.62
		57	125	Ball	LL	62635	244.13	39121	217.93
		75	150	Square	XX	62192	248.53	30034	217.69
		75	150	Ball	XX	62659	275.75	32398	244.91
		45	120	Square	RR	37231	284.21	36769	260.73
25	25	45	120	Ball	RR	37511	265.06	39472	241.58
		75	150	Square	XX	62193	355.62	30037	327.02
		75	150	Ball	XX	62660	404.71	32441	376.11

**Style Code Reference**  
 LL—Long LOC, Long OAL  
 RR—Regular LOC, Regular OAL  
 RX—Regular LOC, X-Long OAL  
 SR—Short LOC, Regular OAL  
 SS—Short LOC, Short OAL  
 XX—X-Long LOC, X-Long OAL