

# G-~~A~~lloy

## PRECISION SOLID CARBIDE CUTTING TOOLS

*Over 3,500 Items Available!*

















- Fractional & Metric
- 2,3,4,5,6,7 Flutes
- Ball Nose, Square & Corner Radius
- A Comprehensive Range of Lengths

SCAN FOR  
DIGITAL CATALOG







 **DGL**  
SUPPLY®






## GP General Purpose

	Series: 300, 310, 320, 330 Square End 2, 3 & 4 Flute - Fractional Uncoated	5-7
	Series: 301, 311, 321, 331 Square End 2, 3 & 4 Flute - Fractional Coated	5-7
	Series: 350, 370, 380 Square End 2, 3 & 4 Flute - Metric Uncoated	8
	Series: 351, 371, 381 Square End 2, 3 & 4 Flute - Metric Coated	8
	Series: 305, 315, 325, 335 Ball Nose 2, 3 & 4 Flute - Fractional Uncoated	9-11
	Series: 306, 316, 326, 336 Ball Nose 2, 3 & 4 Flute - Fractional Coated	9-11
	Series: 360 Ball Nose 2 & 4 Flute - Metric Uncoated	12
	Series: 361 Ball Nose 2 & 4 Flute - Metric Coated	12
	Series: 302, 312 Double Ended Square End 2 & 4 Flute - Fractional Uncoated	13
	Series: 303, 313 Double Ended Square End 2 & 4 Flute - Fractional Coated	13
	Series: 307, 318 Double Ended Ball Nose End 2 & 4 Flute - Fractional Uncoated	14
	Series: 308, 319 Double Ended Ball Nose End 2 & 4 Flute - Fractional Coated	14
	Series: 390 90 Degree Drill/Mills 2 & 4 Flute - Fractional Uncoated	15
	Series: 391 90 Degree Drill/Mills 2 & 4 Flute - Fractional Coated	15
	Series: 340 30 Degree Engraving Tools 1 Flute - Fractional Coated	15
	Series: 341 145 Degree Spot Drill 2 Flute - Fractional Coated	15
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## VP Variable Pitch

	Series: 400, 401, 410, 411, 420, 421, 430 Square & Corner Radius 4 Flute - Fractional Coated	17-18
	Series: 415, 416, 425, 426, 435 Ball Nose 4 Flute - Fractional Coated	19
	Series: 460 Long Reach Neck Relief Square & Corner Radius 4 Flute - Fractional Coated	20
	Series: 465 Long Reach Neck Relief Ball Nose 4 Flute - Fractional Coated	20
	Speeds & Feeds Chart VP Variable Pitch	21

## HP High Performance

	Series: 500, 501, 510, 511, 520, 521, 522 Square & Corner Radius 4 Flute - Fractional Coated	22-23
	Series: 510 Square End & Corner Radius 5 Flute - Fractional Coated	22-23
	Series: 515, 516, 525, 526, 530 Ball Nose 4 Flute - Fractional Coated	24
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	Series: 579 Square & Corner Radius 7 Flute - Fractional Coated	24
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## AL Aluminum

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	Series: 601, 611, 621 Square & Corner Radius 2 & 3 Flute - Medium/Finishing Coated	26
	Series: 605, 615, 625 Ball Nose 2 & 3 Flute - Medium/Finishing Uncoated	27
	Series: 606, 616, 626 Ball Nose 2 & 3 Flute- Medium/Finishing Coated	27
	Series: 630, 635, 645, 655 Square & Corner Radius 3 Flute - Medium/Roughing Uncoated	28-29
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	Speeds & Feeds Chart AL Aluminum	29
	Special EndMill Form	30

# G-Alloy Solid Round Cutting Tools

A comprehensive range of precision manufactured solid carbide tooling. World leading manufacturing facilities utilizing advanced grinding, PVD coating & surface preparation technologies to produce industry leading tools.

<b>G-Alloy</b>	GP	VP	HP	AL																																																																								
	GOOD	BETTER	BEST	BEST																																																																								
GENERAL PURPOSE	✓																																																																											
30 DEG HELIX CARBIDE	✓																																																																											
10% MICRO GRAIN CARBIDE	✓	✓																																																																										
DIAMETER TOLERANCES: +0.0000"/-0.0020"	✓	✓																																																																										
SPECIAL HELIX DESIGN		✓	✓	✓																																																																								
VARIABLE PITCH TO REDUCE CHATTER		✓	✓	✓																																																																								
10% PREMIUM SUB MICRO GRAIN CARBIDE			✓	✓																																																																								
DIAMETER TOLERANCES: +0.0000"/-0.0015"			✓																																																																									
DIAMETER TOLERANCES: +0.0000"/-0.0004"				✓																																																																								
<b>COATINGS:</b>																																																																												
ZrN (Zirconium Nitride) - Pale Gold Color; Provides high lubricity for machining aluminum & non-ferrous materials	<table border="1"> <tr><td>P</td><td>●</td><td>Steel</td></tr> <tr><td>M</td><td>○</td><td>Stainless Steel</td></tr> <tr><td>K</td><td>●</td><td>Cast Iron</td></tr> <tr><td>N</td><td>○</td><td>Non-Ferrous</td></tr> <tr><td>S</td><td>○</td><td>High Temp. Alloys</td></tr> <tr><td>H</td><td>○</td><td>Hardened Steel</td></tr> </table> <p>● GOOD ○ OK ○ NOT OPTIMAL</p>	P	●	Steel	M	○	Stainless Steel	K	●	Cast Iron	N	○	Non-Ferrous	S	○	High Temp. Alloys	H	○	Hardened Steel	<table border="1"> <tr><td>P</td><td>●</td><td>Steel</td></tr> <tr><td>M</td><td>○</td><td>Stainless Steel</td></tr> <tr><td>K</td><td>●</td><td>Cast Iron</td></tr> <tr><td>N</td><td>○</td><td>Non-Ferrous</td></tr> <tr><td>S</td><td>○</td><td>High Temp. Alloys</td></tr> <tr><td>H</td><td>○</td><td>Hardened Steel</td></tr> </table> <p>● BETTER ○ OK ○ NOT OPTIMAL</p>	P	●	Steel	M	○	Stainless Steel	K	●	Cast Iron	N	○	Non-Ferrous	S	○	High Temp. Alloys	H	○	Hardened Steel	<table border="1"> <tr><td>P</td><td>●</td><td>Steel</td></tr> <tr><td>M</td><td>○</td><td>Stainless Steel</td></tr> <tr><td>K</td><td>●</td><td>Cast Iron</td></tr> <tr><td>N</td><td>○</td><td>Non-Ferrous</td></tr> <tr><td>S</td><td>○</td><td>High Temp. Alloys</td></tr> <tr><td>H</td><td>○</td><td>Hardened Steel</td></tr> </table> <p>● BEST ○ OK ○ NOT OPTIMAL</p>	P	●	Steel	M	○	Stainless Steel	K	●	Cast Iron	N	○	Non-Ferrous	S	○	High Temp. Alloys	H	○	Hardened Steel	<table border="1"> <tr><td>P</td><td>○</td><td>Steel</td></tr> <tr><td>M</td><td>○</td><td>Stainless Steel</td></tr> <tr><td>K</td><td>○</td><td>Cast Iron</td></tr> <tr><td>N</td><td>●</td><td>Non-Ferrous</td></tr> <tr><td>S</td><td>○</td><td>High Temp. Alloys</td></tr> <tr><td>H</td><td>○</td><td>Hardened Steel</td></tr> </table> <p>● BEST</p>	P	○	Steel	M	○	Stainless Steel	K	○	Cast Iron	N	●	Non-Ferrous	S	○	High Temp. Alloys	H	○	Hardened Steel
P	●	Steel																																																																										
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TiALN (Titanium Aluminum Nitride) - Blue/Grey in Color, has high heat & abrasion resistance to improve tool life & cutting speeds over uncoated tools																																																																												

## DGI SUPPLY ORDERING CODE EXAMPLE:

<b>D</b>	<b>R</b>	<b>T</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>5</b>	<b>R</b>
1	1	1	2	2	2	3	3	3	4	5

ORDERING CODE	
2	SERIES NUMBER
3	DECIMAL SIZE
4	NUMBER OF FLUTES
5	CORNER RADIUS

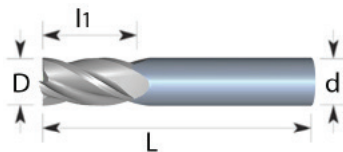






# GP General Purpose Solid Carbide End Mills

Diameter D		Shank d	Cut Length l <sub>h</sub>	Overall Length L	End Face	Bright Finish			TiALN		
Fract.	Decimal					2 FL	3 FL	4 FL	2 FL	3 FL	4 FL
1/64	.0156	1/8	1/16	1-1/2	Square	DRT3100152	DRT3100153	DRT3100154	DRT3110152	DRT3110153	DRT3110154
1/32	.0313	1/8	1/16	1-1/2	Square	DRT3000312	DRT3000313	DRT3000314	DRT3010312	DRT3010313	DRT3010314
			3/32			DRT3100312	DRT3100313	DRT3100314	DRT3110312	DRT3110313	DRT3110314
3/64	.0469	1/8	3/32 1/8	1-1/2	Square	DRT3000462 DRT3100462	DRT3000463 DRT3100463	DRT3000464 DRT3100464	DRT3010462 DRT3110462	DRT3010463 DRT3110463	DRT3010464 DRT3110464
1/16	.0625	1/8	1/8 3/16	1-1/2	Square	DRT3000622 DRT3100622	DRT3000623 DRT3100623	DRT3000624 DRT3100624	DRT3010622 DRT3110622	DRT3010623 DRT3110623	DRT3010624 DRT3110624
5/64	.0781	1/8	1/4	1-1/2	Square	DRT3100782	DRT3100783	DRT3100784	DRT3110782	DRT3110783	DRT3110784
3/32	.0938	1/8	3/16 3/8	1-1/2	Square	DRT3000932 DRT3100932	DRT3000933 DRT3100933	DRT3000934 DRT3100934	DRT3010932 DRT3110932	DRT3010933 DRT3110933	DRT3010934 DRT3110934
7/64	.1094	1/8	3/8	1-1/2	Square	DRT3101092	DRT3101093	DRT3101094	DRT3111092	DRT3111093	DRT3111094
1/8	.1250	1/8	1/4	1-1/2	Square	DRT3001252	DRT3001253	DRT3001254	DRT3011252	DRT3011253	DRT3011254
			1/2			DRT3101252	DRT3101253	DRT3101254	DRT3111252	DRT3111253	DRT3111254
			3/4	DRT3201252		--	DRT3201254	DRT3211252	--	DRT3211254	
			1	DRT3301252		--	DRT3301254	DRT3311252	--	DRT3311254	
9/64	.1406	3/16	9/16	2	Square	DRT3101402	DRT3101403	DRT3101404	DRT3111402	DRT3111403	DRT3111404
5/32	.1563	3/16	5/16	2	Square	DRT3001562	DRT3001563	DRT3001564	DRT3011562	DRT3011563	DRT3011564
			9/16			DRT3101562	DRT3101563	DRT3101564	DRT3111562	DRT3111563	DRT3111564
11/64	.1719	3/16	9/16	2	Square	DRT3101712	DRT3101713	DRT3101714	DRT3111712	DRT3111713	DRT3111714
3/16	.1875	3/16	3/8	2	Square	DRT3001872	DRT3001873	DRT3001874	DRT3011872	DRT3011873	DRT3011874
			5/8			DRT3101872	DRT3101873	DRT3101874	DRT3111872	DRT3111873	DRT3111874
			3/4	DRT3201872		--	DRT3201874	DRT3211872	--	DRT3211874	
			1-1/8	DRT3301872		--	DRT3301874	DRT3311872	--	DRT3311874	
13/64	.2031	1/4	5/8	2-1/2	Square	DRT3102032	DRT3102033	DRT3102034	DRT3112032	DRT3112033	DRT3112034
7/32	.2188	1/4	7/16	2	Square	DRT3002182	DRT3002183	DRT3002184	DRT3012182	DRT3012183	DRT3012184
			5/8			DRT3102182	DRT3102183	DRT3102184	DRT3112182	DRT3112183	DRT3112184
15/64	.2344	1/4	3/4	2-1/2	Square	DRT3102342	DRT3102343	DRT3102344	DRT3112342	DRT3112343	DRT3112344
1/4	.2500	1/4	1/2	2	Square	DRT3002502	DRT3002503	DRT3002504	DRT3012502	DRT3012503	DRT3012504
			3/4			DRT3102502	DRT3102503	DRT3102504	DRT3112502	DRT3112503	DRT3112504
			1-1/8	DRT3202502		--	DRT3202504	DRT3212502	--	DRT3212504	
			1-1/2	DRT3302502		--	DRT3302504	DRT3312502	--	DRT3312504	
17/64	.2656	5/16	7/8	2-1/2	Square	DRT3102652	DRT3102653	DRT3102654	DRT3112652	DRT3112653	DRT3112654
9/32	.2813	5/16	7/8	2-1/2	Square	DRT3102812	DRT3102813	DRT3102814	DRT3112812	DRT3112813	DRT3112814
19/64	.2969	5/16	7/8	2-1/2	Square	DRT3102962	DRT3102963	DRT3102964	DRT3112962	DRT3112963	DRT3112964



- General Purpose
- Micrograin Carbide 10%
- Bright & TiALN Coated
- Variety of Lengths
- Square End
- 2, 3 & 4 Flute
- 30 Degree Helix
- Fractional Sizes

P	●	Steel
M	⊖	Stainless Steel
K	●	Cast Iron
N	○	Non-Ferrous
S		High Temp. Alloys
H		Hardened Steel

● GOOD   ⊖ OK   ○ NOT OPTIMAL

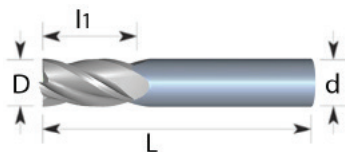
Shank Tolerance: +0.0000"/-0.0004"  
 Diameter Tolerance: +0.0000"/-0.0020"

TiALN (Titanium Aluminum Nitride) - Blue/Grey Color; Provides better abrasion resistance & higher heat resistance to improve tool life over Bright Finish



# GP General Purpose Solid Carbide End Mills

Diameter		Shank d	Cut Length l <sub>1</sub>	Overall Length L	End Face	Bright Finish			TiALN		
Fract.	Decimal					2 FL	3 FL	4 FL	2 FL	3 FL	4 FL
5/16	.3125	5/16	1/2	2	Square	DRT3003122	DRT3003123	DRT3003124	DRT3013122	DRT3013123	DRT3013124
			7/8	2-1/2		DRT3103122	DRT3103123	DRT3103124	DRT3113122	DRT3113123	DRT3113124
			1-1/8	3		DRT3203122	--	DRT3203124	DRT3213122	--	DRT3213124
			1-5/8	4		DRT3303122	--	DRT3303124	DRT3313122	--	DRT3313124
21/64	.3281	3/8	7/8	2-1/2	Square	DRT3103282	DRT3103283	DRT3103284	DRT3113282	DRT3113283	DRT3113284
11/32	.3438	3/8	7/8	2-1/2	Square	DRT3103432	DRT3103433	DRT3103434	DRT3113432	DRT3113433	DRT3113434
23/64	.3594	3/8	7/8	2-1/2	Square	DRT3103592	DRT3103593	DRT3103594	DRT3113592	DRT3113593	DRT3113594
3/8	.3750	3/8	5/8	2	Square	DRT3003752	DRT3003753	DRT3003754	DRT3013752	DRT3013753	DRT3013754
			1	2-1/2		DRT3103752	DRT3103753	DRT3103754	DRT3113752	DRT3113753	DRT3113754
			1-1/8	3		DRT3203752	--	DRT3203754	DRT3213752	--	DRT3213754
			1-3/4	4		DRT3303752	--	DRT3303754	DRT3313752	--	DRT3313754
25/64	.3906	7/16	1	2-1/2	Square	DRT3103902	DRT3103903	DRT3103904	DRT3113902	DRT3113903	DRT3113904
13/32	.4063	7/16	1	2-1/2	Square	DRT3104062	DRT3104063	DRT3104064	DRT3114062	DRT3114063	DRT3114064
27/64	.4219	7/16	1	2-1/2	Square	DRT3104212	DRT3104213	DRT3104214	DRT3114212	DRT3114213	DRT3114214
7/16	.4375	7/16	5/8	2-1/2	Square	DRT3004372	DRT3004373	DRT3004374	DRT3014372	DRT3014373	DRT3014374
			1	2-1/2		DRT3104372	DRT3104373	DRT3104374	DRT3114372	DRT3114373	DRT3114374
			2	4		DRT3204372	--	DRT3204374	DRT3214372	--	DRT3214374
29/64	.4531	1/2	1	3	Square	DRT3104532	DRT3104533	DRT3104534	DRT3114532	DRT3114533	DRT3114534
15/32	.4688	1/2	1	3	Square	DRT3104682	DRT3104683	DRT3104684	DRT3114682	DRT3114683	DRT3114684
31/64	.4844	1/2	1	3	Square	DRT3104842	DRT3104843	DRT3104844	DRT3114842	DRT3114843	DRT3114844
1/2	.5000	1/2	5/8	2-1/2	Square	DRT3005002	DRT3005003	DRT3005004	DRT3015002	DRT3015003	DRT3015004
			1	3		DRT3105002	DRT3105003	DRT3105004	DRT3115002	DRT3115003	DRT3115004
			2	4		DRT3205002	--	DRT3205004	DRT3215002	--	DRT3215004
			3	6		DRT3305002	--	DRT3305004	DRT3315002	--	DRT3315004
33/64	.5156	9/16	1-1/4	3-1/2	Square	DRT3105152	DRT3105153	DRT3105154	DRT3115152	DRT3115153	DRT3115154
17/32	.5313	9/16	1-1/4	3-1/2	Square	DRT3105312	DRT3105313	DRT3105314	DRT3115312	DRT3115313	DRT3115314
35/64	.5469	9/16	1-1/4	3-1/2	Square	DRT3105462	DRT3105463	DRT3105464	DRT3115462	DRT3115463	DRT3115464
9/16	.5625	9/16	1-1/4	3-1/2	Square	DRT3105622	DRT3105623	DRT3105624	DRT3115622	DRT3115623	DRT3115624
37/64	.5781	5/8	1-1/4	3-1/2	Square	DRT3105782	DRT3105783	DRT3105784	DRT3115782	DRT3115783	DRT3115784
19/32	.5938	5/8	1-1/4	3-1/2	Square	DRT3105932	DRT3105933	DRT3105934	DRT3115932	DRT3115933	DRT3115934
39/64	.6094	5/8	1-1/4	3-1/2	Square	DRT3106092	DRT3106093	DRT3106094	DRT3116092	DRT3116093	DRT3116094
5/8	.6250	5/8	3/4	3	Square	DRT3006252	DRT3006253	DRT3006254	DRT3016252	DRT3016253	DRT3016254
			1-1/4	3-1/2		DRT3106252	DRT3106253	DRT3106254	DRT3116252	DRT3116253	DRT3116254
			2-1/4	5		DRT3206252	--	DRT3206254	DRT3216252	--	DRT3216254
			3	6		DRT3306252	--	DRT3306254	DRT3316252	--	DRT3316254



- General Purpose
- Micrograin Carbide 10%
- Bright & TiALN Coated
- Variety of Lengths
- Square End
- 2, 3 & 4 Flute
- 30 Degree Helix
- Fractional Sizes

P	●	Steel
M	○	Stainless Steel
K	●	Cast Iron
N	○	Non-Ferrous
S		High Temp. Alloys
H		Hardened Steel

● GOOD ○ OK ○ NOT OPTIMAL

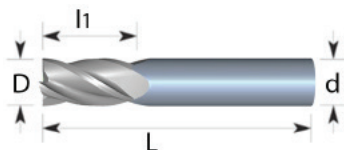
Shank Tolerance: +0.0000"/-0.0004"  
 Diameter Tolerance: +0.0000"/-0.0020"

TiALN (Titanium Aluminum Nitride) - Blue/Grey Color; Provides better abrasion resistance & higher heat resistance to improve tool life over Bright Finish

## GP General Purpose Solid Carbide End Mills

Diameter D		Shank d	Cut Length l <sub>i</sub>	Overall Length L	End Face	Bright Finish			TiALN		
Fract.	Decimal					2 FL	3 FL	4 FL	2 FL	3 FL	4 FL
41/64	.6406	3/4	1-1/2	4	Square	DRT3106402	DRT3106403	DRT3106404	DRT3116402	DRT3116403	DRT3116404
21/32	.6563	3/4	1-1/2	4	Square	DRT3106562	DRT3106563	DRT3106564	DRT3116562	DRT3116563	DRT3116564
43/64	.6719	3/4	1-1/2	4	Square	DRT3106712	DRT3106713	DRT3106714	DRT3116712	DRT3116713	DRT3116714
11/16	.6875	3/4	1-1/2	4	Square	DRT3106872	DRT3106873	DRT3106874	DRT3116872	DRT3116873	DRT3116874
45/64	.7031	3/4	1-1/2	4	Square	DRT3107032	DRT3107033	DRT3107034	DRT3117032	DRT3117033	DRT3117034
23/32	.7188	3/4	1-1/2	4	Square	DRT3107182	DRT3107183	DRT3107184	DRT3117182	DRT3117183	DRT3117184
47/64	.7344	3/4	1-1/2	4	Square	DRT3107342	DRT3107343	DRT3107344	DRT3117342	DRT3117343	DRT3117344
3/4	.7500	3/4	1	3	Square	DRT3007502	DRT3007503	DRT3007504	DRT3017502	DRT3017503	DRT3017504
			1-1/2	4		DRT3107502	DRT3107503	DRT3107504	DRT3117502	DRT3117503	DRT3117504
			2-1/4	5		DRT3207502	--	DRT3207504	DRT3217502	--	DRT3217504
			3	6		DRT3307502	--	DRT3307504	DRT3317502	--	DRT3317504
49/64	.7656	7/8	1-1/2	4	Square	DRT3107652	DRT3107653	DRT3107654	DRT3117652	DRT3117653	DRT3117654
25/32	.7813	7/8	1-1/2	4	Square	DRT3107812	DRT3107813	DRT3107814	DRT3117812	DRT3117813	DRT3117814
51/64	.7969	7/8	1-1/2	4	Square	DRT3107962	DRT3107963	DRT3107964	DRT3117962	DRT3117963	DRT3117964
13/16	.8125	7/8	1-1/2	4	Square	DRT3108122	DRT3108123	DRT3108124	DRT3118122	DRT3118123	DRT3118124
53/64	.8281	7/8	1-1/2	4	Square	DRT3108282	DRT3108283	DRT3108284	DRT3118282	DRT3118283	DRT3118284
27/32	.8438	7/8	1-1/2	4	Square	DRT3108432	DRT3108433	DRT3108434	DRT3118432	DRT3118433	DRT3118434
55/64	.8594	7/8	1-1/2	4	Square	DRT3108592	DRT3108593	DRT3108594	DRT3118592	DRT3118593	DRT3118594
7/8	.8750	7/8	1-1/2	4	Square	DRT3108752	DRT3108753	DRT3108754	DRT3118752	DRT3118753	DRT3118754
57/64	.8906	1	1-1/2	4	Square	DRT3108902	DRT3108903	DRT3108904	DRT3118902	DRT3118903	DRT3118904
29/32	.9063	1	1-1/2	4	Square	DRT3109062	DRT3109063	DRT3109064	DRT3119062	DRT3119063	DRT3119064
59/64	.9219	1	1-1/2	4	Square	DRT3109212	DRT3109213	DRT3109214	DRT3119212	DRT3119213	DRT3119214
15/16	.9375	1	1-1/2	4	Square	DRT3109372	DRT3109373	DRT3109374	DRT3119372	DRT3119373	DRT3119374
61/64	.9531	1	1-1/2	4	Square	DRT3109532	DRT3109533	DRT3109534	DRT3119532	DRT3119533	DRT3119534
31/32	.9688	1	1-1/2	4	Square	DRT3109682	DRT3109683	DRT3109684	DRT3119682	DRT3119683	DRT3119684
63/64	.9844	1	1-1/2	4	Square	DRT3109842	DRT3109843	DRT3109844	DRT3119842	DRT3119843	DRT3119844
1	1.0000	1	1	3	Square	DRT3001002	DRT3001003	DRT3001004	DRT3011002	DRT3011003	DRT3011004
			1-1/2	4		DRT3101002	DRT3101003	DRT3101004	DRT3111002	DRT3111003	DRT3111004
			2-1/4	5		DRT3201002	--	DRT3201004	DRT3211002	--	DRT3211004
			3	6		DRT3301002	--	DRT3301004	DRT3311002	--	DRT3311004

***Need a Special Size... Give us a call***  
***Quick delivery times & low minimum orders***



- General Purpose
- Micrograin Carbide 10%
- Bright & TiALN Coated
- Variety of Lengths
- Square End
- 2, 3 & 4 Flute
- 30 Degree Helix
- Fractional & Metric Sizes

<b>P</b>	●	Steel
<b>M</b>	⊖	Stainless Steel
<b>K</b>	●	Cast Iron
<b>N</b>	○	Non-Ferrous
<b>S</b>		High Temp. Alloys
<b>H</b>		Hardened Steel
● GOOD    ● OK    ○ NOT OPTIMAL		

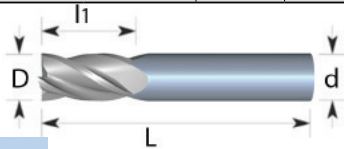
Shank Tolerance: +0.0000"/-0.0004"  
 Diameter Tolerance: +0.0000"/-0.0020"

TiALN (Titanium Aluminum Nitride) - Blue/Grey Color;  
 Provides better abrasion resistance & higher heat  
 resistance to improve tool life over Bright Finish



## GP General Purpose Solid Carbide End Mills - METRIC

Diameter D		Shank d	Cut Length l <sub>1</sub>	Overall Length L	End Face	Bright Finish			TiALN		
MM	Decimal					2 FL	3 FL	4 FL	2 FL	3 FL	4 FL
1	.0394	1	3	38	Square	DRT3500102	DRT3500103	DRT3500104	DRT3510102	DRT3510103	DRT3510104
1.5	.0591	2	5	38	Square	DRT3500152	DRT3500153	DRT3500154	DRT3510152	DRT3510153	DRT3510154
2	.0787	2	6	38	Square	DRT3500202	DRT3500203	DRT3500204	DRT3510202	DRT3510203	DRT3510204
3	.1181	3	12	38	Square	DRT3500302	DRT3500303	DRT3500304	DRT3510302	DRT3510303	DRT3510304
			25	75		--	DRT3700304	DRT3710302	--	DRT3710304	
			25	100		--	DRT3800304	DRT3810302	--	DRT3810304	
3.5	.1378	4	12	50	Square	DRT3500352	DRT3500353	DRT3500354	DRT3510352	DRT3510353	DRT3510354
4	.1575	4	14	50	Square	DRT3500402	DRT3500403	DRT3500404	DRT3510402	DRT3510403	DRT3510404
			25	75		--	DRT3700404	DRT3710402	--	DRT3710404	
			50	100		--	DRT3800404	DRT3810402	--	DRT3810404	
4.5	.1772	5	14	50	Square	DRT3500452	DRT3500453	DRT3500454	DRT3510452	DRT3510453	DRT3510454
5	.1968	5	16	50	Square	DRT3500502	DRT3500503	DRT3500504	DRT3510502	DRT3510503	DRT3510504
			25	75		--	DRT3700504	DRT3710502	--	DRT3710504	
			30	100		--	DRT3800504	DRT3810502	--	DRT3810504	
6	.2362	6	19	63	Square	DRT3500602	DRT3500603	DRT3500604	DRT3510602	DRT3510603	DRT3510604
			25	75		--	DRT3700604	DRT3710602	--	DRT3710604	
			50	100		--	DRT3800604	DRT3810602	--	DRT3810604	
7	.2756	8	19	63	Square	DRT3500702	DRT3500703	DRT3500704	DRT3510702	DRT3510703	DRT3510704
			19	63		DRT3500802	DRT3500803	DRT3500804	DRT3510802	DRT3510803	DRT3510804
			30	100		--	DRT3700804	DRT3710802	--	DRT3710804	
8	.3149	8	50	150	Square	DRT3800802	--	DRT3800804	DRT3810802	--	DRT3810804
			19	63		DRT3500902	DRT3500903	DRT3500904	DRT3510902	DRT3510903	DRT3510904
			22	70		DRT3501002	DRT3501003	DRT3501004	DRT3511002	DRT3511003	DRT3511004
10	.3937	10	22	70	Square	DRT3701002	--	DRT3701004	DRT3711002	--	DRT3711004
			38	100		DRT3801002	--	DRT3801004	DRT3811002	--	DRT3811004
			75	150		DRT3501102	DRT3501103	DRT3501104	DRT3511102	DRT3511103	DRT3511104
11	.4331	12	25	70	Square	DRT3501202	DRT3501203	DRT3501204	DRT3511202	DRT3511203	DRT3511204
			25	75		DRT3701202	--	DRT3701204	DRT3711202	--	DRT3711204
			50	100		DRT3801202	--	DRT3801204	DRT3811202	--	DRT3811204
12	.4724	12	75	150	Square	DRT3501402	DRT3501403	DRT3501404	DRT3511402	DRT3511403	DRT3511404
			30	88		DRT3701402	--	DRT3701404	DRT3711402	--	DRT3711404
			50	125		DRT3801402	--	DRT3801404	DRT3811402	--	DRT3811404
14	.5512	14	75	150	Square	DRT3501602	DRT3501603	DRT3501604	DRT3511602	DRT3511603	DRT3511604
			32	88		DRT3701602	--	DRT3701604	DRT3711602	--	DRT3711604
			75	150		DRT3501802	DRT3501803	DRT3501804	DRT3511802	DRT3511803	DRT3511804
16	.6299	16	36	100	Square	DRT3701802	--	DRT3701804	DRT3711802	--	DRT3711804
			75	150		DRT3502002	DRT3502003	DRT3502004	DRT3512002	DRT3512003	DRT3512004
			38	100		DRT3702002	--	DRT3702004	DRT3712002	--	DRT3712004
20	.7874	20	75	150	Square	DRT3502202	DRT3502203	DRT3502204	DRT3512202	DRT3512203	DRT3512204
			38	100		DRT3502502	DRT3502503	DRT3502504	DRT3512502	DRT3512503	DRT3512504
			75	150		DRT3702502	--	DRT3702504	DRT3712502	--	DRT3712504
22	.8661	22	38	100	Square	DRT3502502	DRT3502503	DRT3502504	DRT3512502	DRT3512503	DRT3512504
			38	100		DRT3702502	--	DRT3702504	DRT3712502	--	DRT3712504
			75	150		DRT3502502	DRT3502503	DRT3502504	DRT3512502	DRT3512503	DRT3512504
25	.9843	25	38	100	Square	DRT3702502	--	DRT3702504	DRT3712502	--	DRT3712504
			38	100		DRT3502502	DRT3502503	DRT3502504	DRT3512502	DRT3512503	DRT3512504
			75	150		DRT3702502	--	DRT3702504	DRT3712502	--	DRT3712504



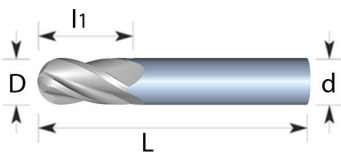
Shank Tolerance: +0.0000"/-0.0004"  
 Diameter Tolerance: +0.0000"/-0.0020"

TiALN (Titanium Aluminum Nitride) - Blue/Grey Color; Provides better abrasion resistance & higher heat resistance to improve tool life over Bright Finish



# Ball Nose GP General Purpose Solid Carbide End Mills

Diameter D		Shank d	Cut Length l <sub>1</sub>	Overall Length L	End Face	Bright Finish			TiALN		
Fract.	Decimal					2 FL	3 FL	4 FL	2 FL	3 FL	4 FL
1/64	.0156	1/8	1/16	1-1/2	Ball Nose	DRT3150152	DRT3150153	DRT3150154	DRT3160152	DRT3160153	DRT3160154
1/32	.0313	1/8	1/16	1-1/2	Ball Nose	DRT3050312	DRT3050313	DRT3050314	DRT3060312	DRT3060313	DRT3060314
			3/32			DRT3150312	DRT3150313	DRT3150314	DRT3160312	DRT3160313	DRT3160314
3/64	.0469	1/8	3/32	1-1/2	Ball Nose	DRT3050462	DRT3050463	DRT3050464	DRT3060462	DRT3060463	DRT3060464
			1/8			DRT3150462	DRT3150463	DRT3150464	DRT3160462	DRT3160463	DRT3160464
1/16	.0625	1/8	1/8	1-1/2	Ball Nose	DRT3050622	DRT3050623	DRT3050624	DRT3060622	DRT3060623	DRT3060624
			3/16			DRT3150622	DRT3150623	DRT3150624	DRT3160622	DRT3160623	DRT3160624
5/64	.0781	1/8	1/4	1-1/2	Ball Nose	DRT3150782	DRT3150783	DRT3150784	DRT3160782	DRT3160783	DRT3160784
3/32	.0938	1/8	3/16	1-1/2	Ball Nose	DRT3050932	DRT3050933	DRT3050934	DRT3060932	DRT3060933	DRT3060934
			3/8			DRT3150932	DRT3150933	DRT3150934	DRT3160932	DRT3160933	DRT3160934
7/64	.1094	1/8	3/8	1-1/2	Ball Nose	DRT3151092	DRT3151093	DRT3151094	DRT3161092	DRT3161093	DRT3161094
1/8	.1250	1/8	1/4	1-1/2	Ball Nose	DRT3051252	DRT3051253	DRT3051254	DRT3061252	DRT3061253	DRT3061254
			1/2			DRT3151252	DRT3151253	DRT3151254	DRT3161252	DRT3161253	DRT3161254
			3/4	DRT3251252		--	DRT3251254	DRT3261252	--	DRT3261254	
			1	DRT3351252		--	DRT3351254	DRT3361252	--	DRT3361254	
9/64	.1406	3/16	9/16	2	Ball Nose	DRT3151402	DRT3151403	DRT3151404	DRT3161402	DRT3161403	DRT3161404
			5/16			DRT3051562	DRT3051563	DRT3051564	DRT3061562	DRT3061563	DRT3061564
5/32	.1563	3/16	9/16	2	Ball Nose	DRT3151562	DRT3151563	DRT3151564	DRT3161562	DRT3161563	DRT3161564
			5/8			DRT3051872	DRT3051873	DRT3051874	DRT3061872	DRT3061873	DRT3061874
3/16	.1875	3/16	3/8	2	Ball Nose	DRT3051872	DRT3051873	DRT3051874	DRT3061872	DRT3061873	DRT3061874
			5/8			DRT3151872	DRT3151873	DRT3151874	DRT3161872	DRT3161873	DRT3161874
			3/4	DRT3251872		--	DRT3251874	DRT3261872	--	DRT3261874	
			1-1/8	DRT3351872		--	DRT3351874	DRT3361872	--	DRT3361874	
13/64	.2031	1/4	5/8	2-1/2	Ball Nose	DRT3152032	DRT3152033	DRT3152034	DRT3162032	DRT3162033	DRT3162034
7/32	.2188	1/4	7/16	2	Ball Nose	DRT3052182	DRT3052183	DRT3052184	DRT3062182	DRT3062183	DRT3062184
			5/8			DRT3152182	DRT3152183	DRT3152184	DRT3162182	DRT3162183	DRT3162184
15/64	.2344	1/4	3/4	2-1/2	Ball Nose	DRT3152342	DRT3152343	DRT3152344	DRT3162342	DRT3162343	DRT3162344
1/4	.2500	1/4	1/2	2	Ball Nose	DRT3052502	DRT3052503	DRT3052504	DRT3062502	DRT3062503	DRT3062504
			3/4			DRT3152502	DRT3152503	DRT3152504	DRT3162502	DRT3162503	DRT3162504
			1-1/8	DRT3252502		--	DRT3252504	DRT3262502	--	DRT3262504	
			1-1/2	DRT3352502		--	DRT3352504	DRT3362502	--	DRT3362504	
17/64	.2656	5/16	7/8	2-1/2	Ball Nose	DRT3152652	DRT3152653	DRT3152654	DRT3162652	DRT3162653	DRT3162654
9/32	.2813	5/16	7/8	2-1/2	Ball Nose	DRT3152812	DRT3152813	DRT3152814	DRT3162812	DRT3162813	DRT3162814
19/64	.2969	5/16	7/8	2-1/2	Ball Nose	DRT3152962	DRT3152963	DRT3152964	DRT3162962	DRT3162963	DRT3162964



- General Purpose
- Micrograin Carbide 10%
- Bright & TiALN Coated
- Variety of Lengths
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- Fractional Sizes

P	●	Steel
M	⊖	Stainless Steel
K	●	Cast Iron
N	○	Non-Ferrous
S		High Temp. Alloys
H		Hardened Steel

● GOOD   ⊖ OK   ○ NOT OPTIMAL

Shank Tolerance: +0.0000"/-0.0004"  
 Diameter Tolerance: +0.0000"/-0.0020"

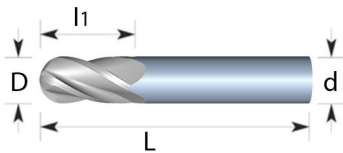


TiALN (Titanium Aluminum Nitride) - Blue/Grey Color; Provides better abrasion resistance & higher heat resistance to improve tool life over Bright Finish

**GP**

# Ball Nose GP General Purpose Solid Carbide End Mills

Diameter		Shank d	Cut Length l <sub>1</sub>	Overall Length L	End Face	Bright Finish			TiALN		
Fract.	Decimal					2 FL	3 FL	4 FL	2 FL	3 FL	4 FL
5/16	.3125	5/16	1/2	2	Ball Nose	DRT3053122	DRT3053123	DRT3053124	DRT3063122	DRT3063123	DRT3063124
			7/8	2-1/2		DRT3153122	DRT3153123	DRT3153124	DRT3163122	DRT3163123	DRT3163124
			1-1/8	3		DRT3253122	--	DRT3253124	DRT3263122	--	DRT3263124
			1-5/8	4		DRT3353122	--	DRT3353124	DRT3363122	--	DRT3363124
21/64	.3281	3/8	7/8	2-1/2	Ball Nose	DRT3153282	DRT3153283	DRT3153284	DRT3163282	DRT3163283	DRT3163284
11/32	.3438	3/8	7/8	2-1/2	Ball Nose	DRT3153432	DRT3153433	DRT3153434	DRT3163432	DRT3163433	DRT3163434
23/64	.3594	3/8	7/8	2-1/2	Ball Nose	DRT3153592	DRT3153593	DRT3153594	DRT3163592	DRT3163593	DRT3163594
3/8	.3750	3/8	5/8	2	Ball Nose	DRT3053752	DRT3053753	DRT3053754	DRT3063752	DRT3063753	DRT3063754
			1	2-1/2		DRT3153752	DRT3153753	DRT3153754	DRT3163752	DRT3163753	DRT3163754
			1-1/8	3		DRT3253752	--	DRT3253754	DRT3263752	--	DRT3263754
			1-3/4	4		DRT3353752	--	DRT3353754	DRT3363752	--	DRT3363754
25/64	.3906	7/16	1	2-1/2	Ball Nose	DRT3153902	DRT3153903	DRT3153904	DRT3163902	DRT3163903	DRT3163904
13/32	.4063	7/16	1	2-1/2	Ball Nose	DRT3154062	DRT3154063	DRT3154064	DRT3164062	DRT3164063	DRT3164064
27/64	.4219	7/16	1	2-1/2	Ball Nose	DRT3154212	DRT3154213	DRT3154214	DRT3164212	DRT3164213	DRT3164214
7/16	.4375	7/16	5/8	2-1/2	Ball Nose	DRT3054372	DRT3054373	DRT3054374	DRT3064372	DRT3064373	DRT3064374
			1	2-1/2		DRT3154372	DRT3154373	DRT3154374	DRT3164372	DRT3164373	DRT3164374
			2	4		DRT3254372	--	DRT3254374	DRT3264372	--	DRT3264374
29/64	.4531	1/2	1	3	Ball Nose	DRT3154532	DRT3154533	DRT3154534	DRT3164532	DRT3164533	DRT3164534
15/32	.4688	1/2	1	3	Ball Nose	DRT3154682	DRT3154683	DRT3154684	DRT3164682	DRT3164683	DRT3164684
31/64	.4844	1/2	1	3	Ball Nose	DRT3154842	DRT3154843	DRT3154844	DRT3164842	DRT3164843	DRT3164844
1/2	.5000	1/2	5/8	2-1/2	Ball Nose	DRT3055002	DRT3055003	DRT3055004	DRT3065002	DRT3065003	DRT3065004
			1	3		DRT3155002	DRT3155003	DRT3155004	DRT3165002	DRT3165003	DRT3165004
			2	4		DRT3255002	--	DRT3255004	DRT3265002	--	DRT3265004
			3	6		DRT3355002	--	DRT3355004	DRT3365002	--	DRT3365004
33/64	.5156	9/16	1-1/4	3-1/2	Ball Nose	DRT3155152	DRT3155153	DRT3155154	DRT3165152	DRT3165153	DRT3165154
17/32	.5313	9/16	1-1/4	3-1/2	Ball Nose	DRT3155312	DRT3155313	DRT3155314	DRT3165312	DRT3165313	DRT3165314
35/64	.5469	9/16	1-1/4	3-1/2	Ball Nose	DRT3155462	DRT3155463	DRT3155464	DRT3165462	DRT3165463	DRT3165464
9/16	.5625	9/16	1-1/4	3-1/2	Ball Nose	DRT3155622	DRT3155623	DRT3155624	DRT3165622	DRT3165623	DRT3165624
37/64	.5781	5/8	1-1/4	3-1/2	Ball Nose	DRT3155782	DRT3155783	DRT3155784	DRT3165782	DRT3165783	DRT3165784
19/32	.5938	5/8	1-1/4	3-1/2	Ball Nose	DRT3155932	DRT3155933	DRT3155934	DRT3165932	DRT3165933	DRT3165934
39/64	.6094	5/8	1-1/4	3-1/2	Ball Nose	DRT3156092	DRT3156093	DRT3156094	DRT3166092	DRT3166093	DRT3166094
5/8	.6250	5/8	3/4	3	Ball Nose	DRT3056252	DRT3056253	DRT3056254	DRT3066252	DRT3066253	DRT3066254
			1-1/4	3-1/2		DRT3156252	DRT3156253	DRT3156254	DRT3166252	DRT3166253	DRT3166254
			2-1/4	5		DRT3256252	--	DRT3256254	DRT3266252	--	DRT3266254
			3	6		DRT3356252	--	DRT3356254	DRT3366252	--	DRT3366254



- General Purpose
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P	●	Steel
M	○	Stainless Steel
K	●	Cast Iron
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● GOOD   ○ OK   ○ NOT OPTIMAL

Shank Tolerance: +0.0000"/-0.0004"  
 Diameter Tolerance: +0.0000"/-0.0020"

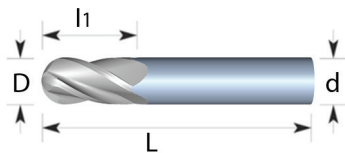
TiALN (Titanium Aluminum Nitride) - Blue/Grey Color;  
 Provides better abrasion resistance & higher heat  
 resistance to improve tool life over Bright Finish





# Ball Nose GP General Purpose Solid Carbide End Mills

Diameter		Shank D	Cut Length l <sub>1</sub>	Overall Length L	End Face	Bright Finish			TiALN		
Fract.	Decimal					2 FL	3 FL	4 FL	2 FL	3 FL	4 FL
41/64	.6406	3/4	1-1/2	4	Ball Nose	DRT3156402	DRT3156403	DRT3156404	DRT3166402	DRT3166403	DRT3166404
21/32	.6563	3/4	1-1/2	4	Ball Nose	DRT3156562	DRT3156563	DRT3156564	DRT3166562	DRT3166563	DRT3166564
43/64	.6719	3/4	1-1/2	4	Ball Nose	DRT3156712	DRT3156713	DRT3156714	DRT3166712	DRT3166713	DRT3166714
11/16	.6875	3/4	1-1/2	4	Ball Nose	DRT3156872	DRT3156873	DRT3156874	DRT3166872	DRT3166873	DRT3166874
45/64	.7031	3/4	1-1/2	4	Ball Nose	DRT3157032	DRT3157033	DRT3157034	DRT3167032	DRT3167033	DRT3167034
23/32	.7188	3/4	1-1/2	4	Ball Nose	DRT3157182	DRT3157183	DRT3157184	DRT3167182	DRT3167183	DRT3167184
47/64	.7344	3/4	1-1/2	4	Ball Nose	DRT3157342	DRT3157343	DRT3157344	DRT3167342	DRT3167343	DRT3167344
3/4	.7500	3/4	1	3	Ball Nose	DRT3057502	DRT3057503	DRT3057504	DRT3067502	DRT3067503	DRT3067504
			1-1/2	4		DRT3157502	DRT3157503	DRT3157504	DRT3167502	DRT3167503	DRT3167504
			2-1/4	5		DRT3257502	--	DRT3257504	DRT3267502	--	DRT3267504
			3	6		DRT3357502	--	DRT3357504	DRT3367502	--	DRT3367504
49/64	.7656	7/8	1-1/2	4	Ball Nose	DRT3157652	DRT3157653	DRT3157654	DRT3167652	DRT3167653	DRT3167654
25/32	.7813	7/8	1-1/2	4	Ball Nose	DRT3157812	DRT3157813	DRT3157814	DRT3167812	DRT3167813	DRT3167814
51/64	.7969	7/8	1-1/2	4	Ball Nose	DRT3157962	DRT3157963	DRT3157964	DRT3167962	DRT3167963	DRT3167964
13/16	.8125	7/8	1-1/2	4	Ball Nose	DRT3158122	DRT3158123	DRT3158124	DRT3168122	DRT3168123	DRT3168124
53/64	.8281	7/8	1-1/2	4	Ball Nose	DRT3158282	DRT3158283	DRT3158284	DRT3168282	DRT3168283	DRT3168284
27/32	.8438	7/8	1-1/2	4	Ball Nose	DRT3158432	DRT3158433	DRT3158434	DRT3168432	DRT3168433	DRT3168434
55/64	.8594	7/8	1-1/2	4	Ball Nose	DRT3158592	DRT3158593	DRT3158594	DRT3168592	DRT3168593	DRT3168594
7/8	.8750	7/8	1-1/2	4	Ball Nose	DRT3158752	DRT3158753	DRT3158754	DRT3168752	DRT3168753	DRT3168754
57/64	.8906	1	1-1/2	4	Ball Nose	DRT3158902	DRT3158903	DRT3158904	DRT3168902	DRT3168903	DRT3168904
29/32	.9063	1	1-1/2	4	Ball Nose	DRT3159062	DRT3159063	DRT3159064	DRT3169062	DRT3169063	DRT3169064
59/64	.9219	1	1-1/2	4	Ball Nose	DRT3159212	DRT3159213	DRT3159214	DRT3169212	DRT3169213	DRT3169214
15/16	.9375	1	1-1/2	4	Ball Nose	DRT3159372	DRT3159373	DRT3159374	DRT3169372	DRT3169373	DRT3169374
61/64	.9531	1	1-1/2	4	Ball Nose	DRT3159532	DRT3159533	DRT3159534	DRT3169532	DRT3169533	DRT3169534
31/32	.9688	1	1-1/2	4	Ball Nose	DRT3159682	DRT3159683	DRT3159684	DRT3169682	DRT3169683	DRT3169684
63/64	.9844	1	1-1/2	4	Ball Nose	DRT3159842	DRT3159843	DRT3159844	DRT3169842	DRT3169843	DRT3169844
1	1.0000	1	1	3	Ball Nose	DRT3051002	DRT3051003	DRT3051004	DRT3061002	DRT3061003	DRT3061004
			1-1/2	4		DRT3151002	DRT3151003	DRT3151004	DRT3161002	DRT3161003	DRT3161004
			2-1/4	5		DRT3251002	--	DRT3251004	DRT3261002	--	DRT3261004
			3	6		DRT3351002	--	DRT3351004	DRT3361002	--	DRT3361004



- General Purpose
- Micrograin Carbide 10%
- Bright & TiALN Coated
- Variety of Lengths
- Ball Nose
- 2, 3 & 4 Flute
- 30 Degree Helix
- Fractional Sizes

P	●	Steel
M	○	Stainless Steel
K	●	Cast Iron
N	○	Non-Ferrous
S		High Temp. Alloys
H		Hardened Steel

● GOOD   ○ OK   ○ NOT OPTIMAL

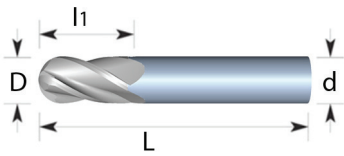
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 Diameter Tolerance: +0.0000"/-0.0020"



TiALN (Titanium Aluminum Nitride) - Blue/Grey Color; Provides better abrasion resistance & higher heat resistance to improve tool life over Bright Finish

# Ball Nose GP General Purpose Solid Carbide End Mills - METRIC

Diameter		Shank	Cut Length	Overall Length	End Face	Bright Finish		TiALN	
MM	D Decimal					2 FL	4 FL	2 FL	4 FL
1	.0394	1	3	38	Ball Nose	DRT3600102	DRT3600104	DRT3610102	DRT3610104
1.5	.0591	2	5	38	Ball Nose	DRT3600152	DRT3600154	DRT3610152	DRT3610154
2	.0787	2	6	38	Ball Nose	DRT3600202	DRT3600204	DRT3610202	DRT3610204
3	.1181	3	12	38	Ball Nose	DRT3600302	DRT3600304	DRT3610302	DRT3610304
3.5	.1378	4	12	50	Ball Nose	DRT3600352	DRT3600354	DRT3610352	DRT3610354
4	.1575	4	14	50	Ball Nose	DRT3600402	DRT3600404	DRT3610402	DRT3610404
4.5	.1772	5	14	50	Ball Nose	DRT3600452	DRT3600454	DRT3610452	DRT3610454
5	.1968	5	16	50	Ball Nose	DRT3600502	DRT3600504	DRT3610502	DRT3610504
6	.2362	6	19	63	Ball Nose	DRT3600602	DRT3600604	DRT3610602	DRT3610604
7	.2756	8	19	63	Ball Nose	DRT3600702	DRT3600704	DRT3610702	DRT3610704
8	.3149	8	19	63	Ball Nose	DRT3600802	DRT3600804	DRT3610802	DRT3610804
9	.3543	10	22	70	Ball Nose	DRT3600902	DRT3600904	DRT3610902	DRT3610904
10	.3937	10	22	70	Ball Nose	DRT3601002	DRT3601004	DRT3611002	DRT3611004
11	.4331	12	25	70	Ball Nose	DRT3601102	DRT3601104	DRT3611102	DRT3611104
12	.4724	12	25	75	Ball Nose	DRT3601202	DRT3601204	DRT3611202	DRT3611204
14	.5512	14	30	88	Ball Nose	DRT3601402	DRT3601404	DRT3611402	DRT3611404
16	.6299	16	32	88	Ball Nose	DRT3601602	DRT3601604	DRT3611602	DRT3611604
18	.7087	18	36	100	Ball Nose	DRT3601802	DRT3601804	DRT3611802	DRT3611804
20	.7874	20	38	100	Ball Nose	DRT3602002	DRT3602004	DRT3612002	DRT3612004
22	.8661	22	38	100	Ball Nose	DRT3602202	DRT3602204	DRT3612202	DRT3612204
25	.9843	25	38	100	Ball Nose	DRT3602502	DRT3602504	DRT3612502	DRT3612504



- General Purpose
- Micorgrain Carbide 10%
- Bright & TiALN Coated
- Variety of Lengths
- Ball Nose
- 2 & 4 Flute
- 30 Degree Helix
- Metric Sizes

P	●	Steel
M	⊖	Stainless Steel
K	●	Cast Iron
N	○	Non-Ferrous
S		High Temp. Alloys
H		Hardened Steel

● GOOD ⊖ OK ○ NOT OPTIMAL



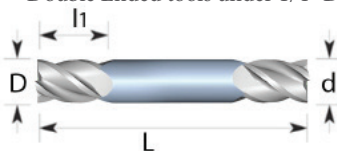
GP



# Double Ended GP General Purpose Solid Carbide End Mills

Diameter		Shank d	Cut Length l <sub>1</sub>	Overall Length L	End Face	Bright Finish		TiALN	
Fract.	Decimal					2 FL	4 FL	2 FL	4 FL
1/32	.0313	1/8	1/16	1-1/2	Square	DRT3020312	DRT3020314	DRT3030312	DRT3030314
3/64	.0469	1/8	3/32	1-1/2	Square	DRT3020462	DRT3020464	DRT3030462	DRT3030464
1/16	.0625	1/8	1/8	1-1/2	Square	DRT3020622	DRT3020624	DRT3030622	DRT3030624
3/32	.0938	1/8	3/16	1-1/2	Square	DRT3020932	DRT3020934	DRT3030932	DRT3030934
			5/16	3		DRT3120932	DRT3120934	DRT3130932	DRT3130934
7/64	.1094	1/8	7/32	1-1/2	Square	DRT3021092	DRT3021094	DRT3031092	DRT3031094
1/8	.1250	1/8	1/4	1-1/2	Square	DRT3021252	DRT3021254	DRT3031252	DRT3031254
			3/8	3		DRT3121252	DRT3121254	DRT3131252	DRT3131254
5/32	.1563	3/16	5/16	2	Square	DRT3021562	DRT3021564	DRT3031562	DRT3031564
			7/16	3		DRT3121562	DRT3121564	DRT3131562	DRT3131564
3/16	.1875	3/16	5/16	2	Square	DRT3021872	DRT3021874	DRT3031872	DRT3031874
			1/2	3-1/4		DRT3121872	DRT3121874	DRT3131872	DRT3131874
7/32	.2188	1/4	3/8	2-1/2	Square	DRT3022182	DRT3022184	DRT3032182	DRT3032184
			9/16	3-1/2		DRT3122182	DRT3122184	DRT3132182	DRT3132184
1/4	.2500	1/4	1/2	2-1/2	Square	DRT3022502	DRT3022504	DRT3032502	DRT3032504
			5/8	3-1/2		DRT3122502	DRT3122504	DRT3132502	DRT3132504
9/32	.2813	5/16	1/2	2-1/2	Square	DRT3022812	DRT3022814	DRT3032812	DRT3032814
5/16	.3125	5/16	1/2	2-1/2	Square	DRT3023122	DRT3023124	DRT3033122	DRT3033124
			3/4	3-1/2		DRT3123122	DRT3123124	DRT3133122	DRT3133124
3/8	.3750	3/8	9/16	2-1/2	Square	DRT3023752	DRT3023754	DRT3033752	DRT3033754
			3/4	3-1/2		DRT3123752	DRT3123754	DRT3133752	DRT3133754
7/16	.4375	1/2	9/16	2-3/4	Square	DRT3024372	DRT3024374	DRT3034372	DRT3034374
			7/8	4		DRT3124372	DRT3124374	DRT3134372	DRT3134374
1/2	.5000	1/2	5/8	3	Square	DRT3025002	DRT3025004	DRT3035002	DRT3035004
			1	4		DRT3125002	DRT3125004	DRT3135002	DRT3135004
9/16	.5625	5/8	11/16	3-1/2	Square	DRT3025622	DRT3025624	DRT3035622	DRT3035624
5/8	.6250	5/8	11/16	3-1/2	Square	DRT3026252	DRT3026254	DRT3036252	DRT3036254
			1-1/2	6		DRT3126252	DRT3126254	DRT3136252	DRT3136254
3/4	.7500	3/4	7/8	4	Square	DRT3027502	DRT3027504	DRT3037502	DRT3037504
			1-1/2	6		DRT3127502	DRT3127504	DRT3137502	DRT3137504

\* Double Ended tools under 1/4" Diameter have Round Shanks. 1/4" diameter & larger have Weldon Shanks.



- General Purpose
- Micrograin Carbide 10%
- Bright & TiALN Coated
- Variety of Lengths
- Square End
- 2 & 4 Flute
- 30 Degree Helix
- Fractional Sizes

P	●	Steel
M	○	Stainless Steel
K	●	Cast Iron
N	○	Non-Ferrous
S		High Temp. Alloys
H		Hardened Steel

● GOOD ○ OK ○ NOT OPTIMAL

Shank Tolerance: +0.0000"/-0.0004"  
 Diameter Tolerance: +0.0000"/-0.0020"



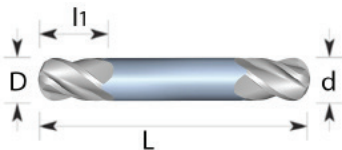
TiALN (Titanium Aluminum Nitride) - Blue/Grey Color; Provides better abrasion resistance & higher heat resistance to improve tool life over Bright Finish



# Double Ended Ball Nose GP General Purpose Solid Carbide End Mills

Diameter D		Shank d	Cut Length l <sub>1</sub>	Overall Length L	End Face	Bright Finish		TiALN	
Fract.	Decimal					2 FL	4 FL	2 FL	4 FL
1/32	.0313	1/8	1/16	1-1/2	Ball Nose	DRT3070312	DRT3070314	DRT3080312	DRT3080314
3/64	.0469	1/8	3/32	1-1/2	Ball Nose	DRT3070462	DRT3070464	DRT3080462	DRT3080464
1/16	.0625	1/8	1/8	1-1/2	Ball Nose	DRT3070622	DRT3070624	DRT3080622	DRT3080624
3/32	.0938	1/8	3/16 5/16	1-1/2 3	Ball Nose	DRT3070932 DRT3180932	DRT3070934 DRT3180934	DRT3080932 DRT3190932	DRT3080934 DRT3190934
7/64	.1094	1/8	7/32	1-1/2	Ball Nose	DRT3071092	DRT3071094	DRT3081092	DRT3081094
1/8	.1250	1/8	1/4 3/8	1-1/2 3	Ball Nose	DRT3071252 DRT3181252	DRT3071254 DRT3181254	DRT3081252 DRT3191252	DRT3081254 DRT3191254
5/32	.1563	3/16	5/16 7/16	2 3	Ball Nose	DRT3071562 DRT3181562	DRT3071564 DRT3181564	DRT3081562 DRT3191562	DRT3081564 DRT3191564
3/16	.1875	3/16	5/16 1/2	2 3-1/4	Ball Nose	DRT3071872 DRT3181872	DRT3071874 DRT3181874	DRT3081872 DRT3191872	DRT3081874 DRT3191874
7/32	.2188	1/4	3/8 9/16	2-1/2 3-1/2	Ball Nose	DRT3072182 DRT3182182	DRT3072184 DRT3182184	DRT3082182 DRT3192182	DRT3082184 DRT3192184
1/4	.2500	1/4	1/2 5/8	2-1/2 3-1/2	Ball Nose	DRT3072502 DRT3182502	DRT3072504 DRT3182504	DRT3082502 DRT3192502	DRT3082504 DRT3192504
9/32	.2813	5/16	1/2	2-1/2	Ball Nose	DRT3072812	DRT3072814	DRT3082812	DRT3082814
5/16	.3125	5/16	1/2 3/4	2-1/2 3-1/2	Ball Nose	DRT3073122 DRT3183122	DRT3073124 DRT3183124	DRT3083122 DRT3193122	DRT3083124 DRT3193124
3/8	.3750	3/8	9/16 3/4	2-1/2 3-1/2	Ball Nose	DRT3073752 DRT3183752	DRT3073754 DRT3183754	DRT3083752 DRT3193752	DRT3083754 DRT3193754
7/16	.4375	1/2	9/16 7/8	2-3/4 4	Ball Nose	DRT3074372 DRT3184372	DRT3074374 DRT3184374	DRT3084372 DRT3194372	DRT3084374 DRT3194374
1/2	.5000	1/2	5/8 1	3 4	Ball Nose	DRT3075002 DRT3185002	DRT3075004 DRT3185004	DRT3085002 DRT3195002	DRT3085004 DRT3195004
9/16	.5625	5/8	11/16	3-1/2	Ball Nose	DRT3075622	DRT3075624	DRT3085622	DRT3085624
5/8	.6250	5/8	11/16 1-1/2	3-1/2 6	Ball Nose	DRT3076252 DRT3186252	DRT3076254 DRT3186254	DRT3086252 DRT3196252	DRT3086254 DRT3196254
3/4	.7500	3/4	7/8 1-1/2	4 6	Ball Nose	DRT3077502 DRT3187502	DRT3077504 DRT3187504	DRT3087502 DRT3197502	DRT3087504 DRT3197504

\* Double Ended tools under 1/4" Diameter have Round Shanks. 1/4" diameter & larger have Weldon Shanks.



- General Purpose
- Micrograin Carbide 10%
- Bright & TiALN Coated
- Variety of Lengths
- Ball Nose
- 2 & 4 Flute
- 30 Degree Helix
- Fractional Sizes

P	●	Steel
M	●	Stainless Steel
K	●	Cast Iron
N	○	Non-Ferrous
S		High Temp. Alloys
H		Hardened Steel
● GOOD ○ OK ○ NOT OPTIMAL		

Shank Tolerance: +0.0000"/-0.0004"

Diameter Tolerance: +0.0000"/-0.0020"

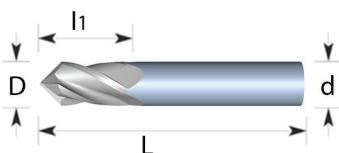
**GP** **G-Alloy**

TiALN (Titanium Aluminum Nitride) - Blue/Grey Color; Provides better abrasion resistance & higher heat resistance to improve tool life over Bright Finish



## GP Solid Carbide Drill/Mill 90 Degree

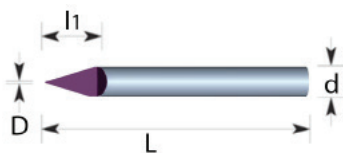
Diameter		Shank d	Cut Length l <sub>1</sub>	Overall Length L	End Face	Bright Finish		TiALN	
Fract.	Decimal					2 FL	4 FL	2 FL	4 FL
1/8	.1250	1/8	1/2	1-1/2	90 Degree	DRT3901252	DRT3901254	DRT3911252	DRT3911254
3/16	.1875	3/16	5/8	2	90 Degree	DRT3901872	DRT3901874	DRT3911872	DRT3911874
1/4	.2500	1/4	3/4	2-1/2	90 Degree	DRT3902502	DRT3902504	DRT3912502	DRT3912504
5/16	.3125	5/16	7/8	2-1/2	90 Degree	DRT3903122	DRT3903124	DRT3913122	DRT3913124
3/8	.3750	3/8	1	2-1/2	90 Degree	DRT3903752	DRT3903754	DRT3913752	DRT3913754
7/16	.4375	7/16	1	2-3/4	90 Degree	DRT3904372	DRT3904374	DRT3914372	DRT3914374
1/2	.5000	1/2	1	3	90 Degree	DRT3905002	DRT3905004	DRT3915002	DRT3915004
5/8	.6250	5/8	1-1/4	3-1/2	90 Degree	DRT3906252	DRT3906254	DRT3916252	DRT3916254
3/4	.7500	3/4	1-1/2	4	90 Degree	DRT3907502	DRT3907504	DRT3917502	DRT3917504



- General Purpose
- Micrograin Carbide 10%
- Bright & TiALN Coated
- 1 Tool Does Many Operations
- 90 Degree End
- 2 & 4 Flute
- 30 Degree Helix
- Fractional Sizes
- Chamfering
- Drilling
- Countersinking
- Milling

## Engraving Tools 30 Degree

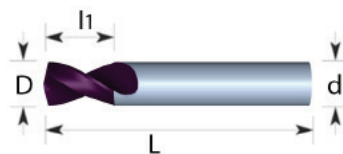
Tip Diameter D	Shank d	Cut Length l <sub>1</sub>	Overall Length L	End Face	TiALN 1 FL
.005	1/4	1/2	2-1/2	30 Degree	DRT340250005
.010					DRT340250010
.020					DRT340250020



- General Purpose
- Micrograin Carbide 10%
- TiALN Coated
- 30 Degree Engraving
- 3 Tip Sizes Available

## Spot Drills 145 Degree

Diameter D	Shank d	Cut Length l <sub>1</sub>	Overall Length L	End Face	TiALN 2 FL
1/4	1/4	1/2	3	145 Degree	DRT3412502
3/8	3/8	3/4	3		DRT3413752
1/2	1/2	1	4		DRT3415002
5/8	5/8	1	4		DRT3416252
3/4	3/4	1-1/8	4		DRT3417502



- General Purpose
- Micrograin Carbide 10%
- TiALN Coated
- 145 Degree Spot Drill
- Allows High Performance Drills to Center Properly Without Damaging Their Outside Edge

Shank Tolerance: +0.0000”/-0.0004”  
 Diameter Tolerance: +0.0000”/-0.0020”

TiALN (Titanium Aluminum Nitride) - Blue/Grey Color; Provides better abrasion resistance & higher heat resistance to improve tool life over Bright Finish



# GP General Purpose Speed & Feed Chart

Material Group	Speed (SFM)		Feed Per Tooth By Diameter (Inches)							
	Bright Finish	TiALN Coated	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"
Aluminum & Aluminum Alloys	600-1200	900-1800	.0020	.0025	.0030	.0035	.0040	.0050	.0060	.0080
Copper & Copper Alloys	350-850	525-1275	.0020	.0025	.0025	.0030	.0030	.0035	.0040	.0060
Brass & Bronze	250-400	375-600	.0020	.0025	.0025	.0030	.0030	.0035	.0040	.0050
Graphite	500-800	500-1200	.0030	.0035	.0025	.0030	.0030	.0040	.0050	.0070
Plastics	600-1100	600-1650	.0030	.0035	.0040	.0050	.0060	.0080	.0100	.0150
Soft Cast Iron	250-450	375-650	.0020	.0022	.0025	.0027	.0030	.0045	.0060	.0080
Hard Cast Iron	100-250	100-375	.0008	.0010	.0015	.0017	.0020	.0025	.0030	.0040
Ductile Iron	80-400	100-600	.0010	.0012	.0015	.0017	.0020	.0030	.0040	.0060
Malleable Iron	150-500	225-650	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0070
Low Carbon Steels	200-400	300-600	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0070
Medium Carbon Steels	100-250	150-375	.0015	.0016	.0017	.0018	.0020	.0030	.0040	.0050
Carbon Steels Hardened to 35 Rc	130-230	130-345	.0010	.0011	.0012	.0013	.0015	.0017	.0020	.0030
Carbon Steels Hardened to 50 Rc	70-130	70-160	.0007	.0007	.0008	.0009	.0010	.0015	.0020	.0030
Carbon Steels Hardened to 60 Rc	30-70	30-90	.0005	.0006	.0007	.0009	.0010	.0012	.0015	.0020
Mold Steels	200-350	300-525	.0010	.0012	.0015	.0017	.0020	.0025	.0030	.0040
Tool Steels	100-250	150-375	.0010	.0012	.0015	.0017	.0020	.0025	.0030	.0040
Soft Stainless Steels	200-350	300-450	.0010	.0012	.0015	.0012	.0020	.0030	.0040	.0060
Hard Stainless Steels	100-200	150-300	.0005	.0006	.0007	.0008	.0010	.0020	.0030	.0050
Monel & High Nickel Steel	75-175	75-200	.0010	.0012	.0015	.0017	.0020	.0025	.0030	.0040
Soft Titanium	125-300	125-375	.0010	.0012	.0015	.0017	.0020	.0030	.0040	.0060
Hard Titanium	50-150	50-175	.0005	.0006	.0007	.0008	.0010	.0015	.0020	.0020
Nickel Based High Temp Alloys	50-100	50-125	.0008	.0008	.0009	.0009	.0010	.0012	.0015	.0020

## TECHNICAL MACHINING POINTS:

- Use the lower end of the speed range for 40 Taper Machines & the higher end of the speed range for 50 Taper Machines.
- Higher feed per tooth should be used to start for radial depths of cut less than 25% of the tool diameter. Lower feed per tooth should be used to start for radial depths of cut greater than 25% of the tool diameter.
- The above recommendations are for axial lengths of cut not to exceed 1 times the tool diameter for profiling and .5 times the diameter for full slotting.
- The above parameters are recommended starting points only. If the tool is working well, without vibrations or significant noise, increase SFM and/or Feed Per Tooth in 5-10% increments.
- Optimum speeds & feeds will depend upon material, setup, machine conditions & tool deflection. Higher or lower parameters may be required to achieve optimum machining conditions.
- For lighter radial depths of cut, make certain to increase the feed rate to compensate for Radial Chip Thinning Factor (RCTF). Consult a formula or app to calculate.
- Climb milling is preferred to Conventional milling.



VIEW OR DOWNLOAD  
GP SPEED AND FEED CHART



<b>P</b>	●	Steel
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<b>K</b>	●	Cast Iron
<b>N</b>	○	Non-Ferrous
<b>S</b>	○	High Temp. Alloys
<b>H</b>		Hardened Steel

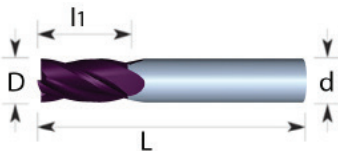
● BETTER ◐ OK ○ NOT OPTIMAL

- Variable Pitch To Reduce Chatter
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- A Wide Variety of Lengths
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- 38 Degree Helix
- Special Core Design to Enhance Strength
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TiALN (Titanium Aluminum Nitride) Blue/Grey Color; Provides better abrasion resistance & higher heat resistance to improve tool life over Bright Finish

Shank Tolerance:  
+0.0000"/-0.0004"

Diameter Tolerance:  
+0.0000"/-0.0020"



## VP Variable Pitch Solid Carbide End Mills

Diameter D		Shank d	Cut Length l <sub>1</sub>	Overall Length L	End Face	TiALN Round Shank	TiALN Weldon Shank
Fract.	Decimal					4 FL	4 FL
3/16	.1875	3/16	3/8	2	Square	DRT4001884	--
			3/8	2	.015CR	DRT4001884015R	--
			5/8	2	Square	DRT4101884	--
			5/8	2	.015CR	DRT4101884015R	--
			3/4	2-1/2	Square	DRT4201884	--
			3/4	2-1/2	.015CR	DRT4201884015R	--
1/4	.2500	1/4	1-1/8	3	Square	DRT4301884	--
			3/8	2	Square	DRT4002504	--
			3/8	2	.015CR	DRT4002504015R	--
			3/4	2-1/2	Square	DRT4102504	DRT4112504
			3/4	2-1/2	.020CR	DRT4102504020R	DRT4112504020R
			1-1/8	3	Square	DRT4202504	DRT4212504
5/16	.3125	5/16	1-1/8	3	.020CR	DRT4202504020R	DRT4212504020R
			1-1/2	4	Square	DRT4302504	--
			3/8	2	Square	DRT4003124	--
			3/8	2	.020CR	DRT4003124020R	--
			13/16	2-1/2	Square	DRT4103124	DRT4113124
			13/16	2-1/2	.020CR	DRT4103124020R	DRT4113124020R
3/8	.3750	3/8	1-1/8	3	Square	DRT4203124	DRT4213124
			1-1/8	3	.020CR	DRT4203124020R	DRT4213124020R
			1-5/8	4	Square	DRT4303124	--
			1/2	2	Square	DRT4003754	--
			1/2	2	.020CR	DRT4003754020R	--
			7/8	2-1/2	Square	DRT4103754	DRT4113754
7/16	.4375	7/16	7/8	2-1/2	.020CR	DRT4103754020R	DRT4113754020R
			1-1/8	3	Square	DRT4203754	DRT4213754
			1-1/8	3	.020CR	DRT4203754020R	DRT4213754020R
			1-3/4	4	Square	DRT4303754	--
			1	2-3/4	Square	DRT4104374	DRT4114374
			2	4	Square	DRT4204374	DRT4214374
1/2	.5000	1/2	5/8	2-1/2	Square	DRT4005004	DRT4015004
			5/8	2-1/2	.030CR	DRT4005004030R	DRT4015004030R
			1-1/4	3	Square	DRT4105004	DRT4115004
			1-1/4	3	.015CR	DRT4105004015R	DRT4115004015R
			1-1/4	3	.030CR	DRT4105004030R	DRT4115004030R
			1-1/4	3	.060CR	DRT4105004060R	DRT4115004060R
			2	4	Square	DRT4205004	DRT4215004
			2	4	.015CR	DRT4205004015R	DRT4215004015R
			2	4	.030CR	DRT4205004030R	DRT4215004030R
			2	4	.060CR	DRT4205004060R	DRT4215004060R
			3	6	Square	DRT4305004	--



# VP Variable Pitch Solid Carbide End Mills

Diameter D		Shank d	Cut Length l <sub>1</sub>	Overall Length L	End Face	TiALN	TiALN
Fract.	Decimal					Round Shank 4 FL	Weldon Shank 4 FL
5/8	.6250	5/8	3/4	3	Square	DRT4006254	DRT4016254
			3/4	3	.030CR	DRT4006254030R	DRT4016254030R
			1-1/4	3-1/2	Square	DRT4106254	DRT4116254
			1-1/4	3-1/2	.030CR	DRT4106254030R	DRT4116254030R
			1-1/4	3-1/2	.060CR	DRT4106254060R	DRT4116254060R
			1-1/4	3-1/2	.125CR	DRT4106254125R	DRT4116254125R
			2-1/4	5	Square	DRT4206254	DRT4216254
			2-1/4	5	.030CR	DRT4206254030R	DRT4216254030R
			2-1/4	5	.060CR	DRT4206254060R	DRT4216254060R
			2-1/4	5	.125CR	DRT4206254125R	DRT4216254125R
3/4	.7500	3/4	1	3	Square	DRT4007504	DRT4017504
			1	3	.030CR	DRT4007504030R	DRT4017504030R
			1-1/2	4	Square	DRT4107504	DRT4117504
			1-1/2	4	.030CR	DRT4107504030R	DRT4117504030R
			1-1/2	4	.060CR	DRT4107504060R	DRT4117504060R
			1-1/2	4	.125CR	DRT4107504125R	DRT4117504125R
			2-1/4	5	Square	DRT4207504	DRT4217504
			2-1/4	5	.030CR	DRT4207504030R	DRT4217504030R
			2-1/4	5	.060CR	DRT4207504060R	DRT4217504060R
			2-1/4	5	.125CR	DRT4207504125R	DRT4217504125R
1	1.0000	1	1-1/2	4	Square	DRT4101004	DRT4111004
			1-1/2	4	.030CR	DRT4101004030R	DRT4111004030R
			1-1/2	4	.060CR	DRT4101004060R	DRT4111004060R
			1-1/2	4	.125CR	DRT4101004125R	DRT4111004125R
			2-1/4	5	Square	DRT4201004	DRT4211004
			2-1/4	5	.030CR	DRT4201004030R	DRT4211004030R
			2-1/4	5	.060CR	DRT4201004060R	DRT4211004060R
			2-1/4	5	.125CR	DRT4201004125R	DRT4211004125R
			3	6	Square	DRT4301004	--

<b>P</b>	●	Steel
<b>M</b>	◐	Stainless Steel
<b>K</b>	●	Cast Iron
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<b>S</b>	○	High Temp. Alloys
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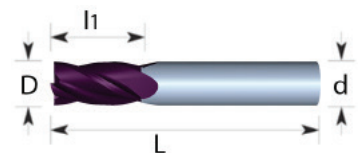
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+0.0000"/-0.0004"

Diameter Tolerance:  
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<b>M</b>	◐	Stainless Steel
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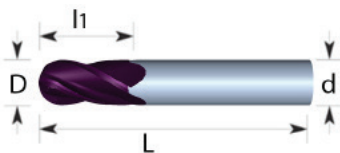
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+0.0000"/-0.0020"



## VP Variable Pitch Solid Carbide End Mills

Diameter D		Shank d	Cut Length l <sub>1</sub>	Overall Length L	End Face	TiALN	TiALN
Fract.	Decimal					Round Shank 4 FL	Weldon Shank 4 FL
3/16	.1875	3/16	5/8	2	Ball Nose	DRT4151884	--
			3/4	2-1/2		DRT4251884	--
			1-1/8	3		DRT4351884	--
1/4	.2500	1/4	3/4	2-1/2	Ball Nose	DRT4152504	DRT4162504
			1-1/8	3		DRT4252504	DRT4262504
			1-1/2	4		DRT4352504	--
5/16	.3125	5/16	13/16	2-1/2	Ball Nose	DRT4153124	DRT4163124
			1-1/8	3		DRT4253124	DRT4263124
			1-5/8	4		DRT4353124	--
3/8	.3750	3/8	7/8	2-1/2	Ball Nose	DRT4153754	DRT4163754
			1-1/8	3		DRT4253754	DRT4263754
			1-3/4	4		DRT4353754	--
7/16	.4375	7/16	1	2-3/4	Ball Nose	DRT4154374	DRT4164374
			2	4		DRT4254374	DRT4264374
1/2	.5000	1/2	1	3	Ball Nose	DRT4155004	DRT4165004
			2	4		DRT4255004	DRT4265004
			3	6		DRT4355004	--
5/8	.6250	5/8	1-1/4	3-1/2	Ball Nose	DRT4156254	DRT4166254
			2-1/4	5		DRT4256254	DRT4266254
			3	6		DRT4356254	--
3/4	.7500	3/4	1-1/2	4	Ball Nose	DRT4157504	DRT4167504
			2-1/4	5		DRT4257504	DRT4267504
			3	6		DRT4357504	--
1	1.0000	1	1-1/2	4	Ball Nose	DRT4151004	DRT4161004
			2-1/4	5		DRT4251004	DRT4261004
			3	6		DRT4351004	--



VP

## VP Variable Pitch Long Reach End Mills

Diameter D		Shank d	Neck Diam.	Cut Length	Length Below Shank	Overall Length	End Face	TiALN Round Shank 4 FL
Fract.	Decimal		d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	L		
3/16	.1875	3/16	.1775	3/8	2-1/2	4	Square	DRT4601884
			.1775	3/8	2-1/2	4	.015CR	DRT4601884015R
			.1775	3/8	2-1/2	4	Ball Nose	DRT4601884015R
1/4	.2500	1/4	.2400	3/8	2-1/2	4	Square	DRT4602504
			.2400	3/8	2-1/2	4	.015CR	DRT4602504015R
			.2400	3/8	2-1/2	4	Ball Nose	DRT4652504
5/16	.3125	5/16	.3025	7/16	2-1/2	4	Square	DRT4603124
			.3025	7/16	2-1/2	4	.015CR	DRT4603124015R
			.3025	7/16	2-1/2	4	Ball Nose	DRT4653124
3/8	.3750	3/8	.3650	1/2	2-1/2	4	Square	DRT4603754
			.3650	1/2	2-1/2	4	.015CR	DRT4603754015R
			.3650	1/2	2-1/2	4	Ball Nose	DRT4653754
1/2	.5000	1/2	.4800	5/8	3	5	Square	DRT4605004
			.4800	5/8	3	5	.020CR	DRT4605004020R
			.4800	5/8	3	5	Ball Nose	DRT4655004
			.4800	5/8	4	6	Square	DRT4605004L
			.4800	5/8	4	6	.020CR	DRT4605004020RL
			.4800	5/8	4	6	Ball Nose	DRT4655004L
5/8	.6250	5/8	.6050	3/4	3	5	Square	DRT4606254
			.6050	3/4	3	5	.020CR	DRT4606254020R
			.6050	3/4	3	5	Ball Nose	DRT4656254
			.6050	3/4	4	6	Square	DRT4606254L
			.6050	3/4	4	6	.020CR	DRT4606254020RL
			.6050	3/4	4	6	Ball Nose	DRT4656254L
3/4	.7500	3/4	.7300	1	3	5	Square	DRT4607504
			.7300	1	3	5	.020CR	DRT4607504020R
			.7300	1	3	5	Ball Nose	DRT4657504
			.7300	1	4	6	Square	DRT4607504L
			.7300	1	4	6	.020CR	DRT4607504020RL
			.7300	1	4	6	Ball Nose	DRT4657504L
			.7300	1	5	7	Square	DRT4607504LL
			.7300	1	5	7	.020CR	DRT4607504020RLL
			.7300	1	5	7	Ball Nose	DRT4657504LL
1	1.0000	1	.9800	1-1/4	3	5	Square	DRT4601004
			.9800	1-1/4	3	5	.020CR	DRT4601004020R
			.9800	1-1/4	3	5	Ball Nose	DRT4651004
			.9800	1-1/4	4	6	Square	DRT4601004L
			.9800	1-1/4	4	6	.020CR	DRT4601004020RL
			.9800	1-1/4	4	6	Ball Nose	DRT4651004L
			.9800	1-1/4	5	7	Square	DRT4601004LL
			.9800	1-1/4	5	7	.020CR	DRT4601004020RLL
			.9800	1-1/4	5	7	Ball Nose	DRT4651004LL

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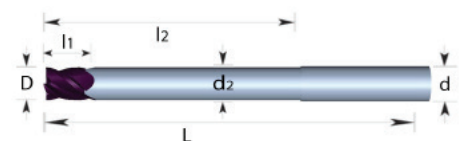
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Diameter Tolerance:  
+0.0000"/-0.0020"





# VP Variable Pitch Speed & Feed Chart

Material Group		TiALN Coated	Feed Per Tooth By Diameter (Inches)							
			1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"
Aluminum & Aluminum Alloys	N	900-1800	.0020	.0025	.0030	.0035	.0040	.0050	.0060	.0080
Copper & Copper Alloys		525-1275	.0020	.0025	.0025	.0030	.0030	.0035	.0040	.0060
Brass & Bronze		375-600	.0020	.0025	.0025	.0030	.0030	.0035	.0040	.0050
Graphite		500-1200	.0030	.0035	.0025	.0030	.0030	.0040	.0050	.0070
Plastics		600-1650	.0030	.0035	.0040	.0050	.0060	.0080	.0100	.0150
Soft Cast Iron	K	375-650	.0020	.0022	.0025	.0027	.0030	.0045	.0060	.0080
Hard Cast Iron		100-375	.0008	.0010	.0015	.0017	.0020	.0025	.0030	.0040
Ductile Iron		100-600	.0010	.0012	.0015	.0017	.0020	.0030	.0040	.0060
Malleable Iron		225-650	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0070
Low Carbon Steels	P	300-600	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0070
Medium Carbon Steels		150-375	.0015	.0016	.0017	.0018	.0020	.0030	.0040	.0050
Carbon Steels Hardened to 35 Rc		130-345	.0010	.0011	.0012	.0013	.0015	.0017	.0020	.0030
Carbon Steels Hardened to 50 Rc		70-160	.0007	.0007	.0008	.0009	.0010	.0015	.0020	.0030
Carbon Steels Hardened to 60 Rc		30-90	.0005	.0006	.0007	.0009	.0010	.0012	.0015	.0020
Mold Steels		300-525	.0010	.0012	.0015	.0017	.0020	.0025	.0030	.0040
Tool Steels		150-375	.0010	.0012	.0015	.0017	.0020	.0025	.0030	.0040
Soft Stainless Steels	M	300-450	.0010	.0012	.0015	.0012	.0020	.0030	.0040	.0060
Hard Stainless Steels		150-300	.0005	.0006	.0007	.0008	.0010	.0020	.0030	.0050
Monel & High Nickel Steel	S	75-200	.0010	.0012	.0015	.0017	.0020	.0025	.0030	.0040
Soft Titanium		125-375	.0010	.0012	.0015	.0017	.0020	.0030	.0040	.0060
Hard Titanium		50-175	.0005	.0006	.0007	.0008	.0010	.0015	.0020	.0020
Nickel Based High Temp Alloys		50-125	.0008	.0008	.0009	.0009	.0010	.0012	.0015	.0020

## TECHNICAL MACHINING POINTS:

- Use the lower end of the speed range for 40 Taper Machines & the higher end of the speed range for 50 Taper Machines.
- Higher feed per tooth should be used to start for radial depths of cut less than 25% of the tool diameter. Lower feed per tooth should be used to start for radial depths of cut greater than 25% of the tool diameter.
- The above recommendations are for axial lengths of cut not to exceed 1.25 times the tool diameter for profiling and .75 times the diameter for full slotting.
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- For lighter radial depths of cut, make certain to increase the feed rate to compensate for Radial Chip Thinning Factor (RCTF). Consult a formula or app to calculate.
- Climb milling is preferred to Conventional milling.



VIEW OR DOWNLOAD  
VP SPEED AND FEED CHART

**G-Alloy**

VP

# HP High Performance Solid Carbide End Mills



Diameter D		Shank d	Cut Length l <sub>1</sub>	Overall Length L	End Face	TiALN	TiALN	TiALN
Fract.	Decimal					Round Shank	Weldon Shank	Round Shank
						4 FL	4 FL	5 FL
1/8	.1250	1/8	1/2	1-1/2	.010CR	DRT5101254010R	--	--
3/16	.1875	3/16	3/8	2	Square	DRT5001884	--	--
			3/8	2	.015CR	DRT5001884015R	--	--
			5/8	2	Square	DRT5101884	--	--
			5/8	2	.015CR	DRT5101884015R	--	--
			3/4	2-1/2	Square	DRT5201884	--	--
			3/4	2-1/2	.015CR	DRT5201884015R	--	--
			1-1/8	3	Square	DRT5221884	--	--
1/4	.2500	1/4	3/8	2	Square	DRT5002504	--	--
			3/8	2	.015CR	DRT5002504015R	--	--
			3/4	2-1/2	Square	DRT5102504	DRT5112504	DRT5102505
			3/4	2-1/2	.020CR	DRT5102504020R	DRT5112504020R	DRT5102505020R
			1-1/8	3	Square	DRT5202504	DRT5212504	--
			1-1/8	3	.020CR	DRT5202504020R	DRT5212504020R	--
			1-1/2	4	Square	DRT5222504	--	--
5/16	.3125	5/16	3/8	2	Square	DRT5003124	--	--
			3/8	2	.020CR	DRT5003124020R	--	--
			13/16	2-1/2	Square	DRT5103124	DRT5113124	DRT5103125
			13/16	2-1/2	.020CR	DRT5103124020R	DRT5113124020R	DRT5103125020R
			1-1/8	3	Square	DRT5203124	DRT5213124	--
			1-1/8	3	.020CR	DRT5203124020R	DRT5213124020R	--
			1-5/8	4	Square	DRT5223124	--	--
3/8	.3750	3/8	1/2	2	Square	DRT5003754	--	--
			1/2	2	.020CR	DRT5003754020R	--	--
			7/8	2-1/2	Square	DRT5103754	DRT5113754	DRT5103755
			7/8	2-1/2	.020CR	DRT5103754020R	DRT5113754020R	DRT5103755020R
			7/8	2-1/2	.030CR	DRT5103754030R	DRT5113754030R	DRT5103755030R
			1-1/8	3	Square	DRT5203754	DRT5213754	--
			1-1/8	3	.020CR	DRT5203754020R	DRT5213754020R	--
			1-3/4	4	Square	DRT5223754	--	--
7/16	.4375	7/16	1	2-3/4	Square	DRT5104374	DRT5114374	--
			2	4	Square	DRT5204374	DRT5214374	--
1/2	.5000	1/2	5/8	2-1/2	Square	DRT5005004	DRT5015004	--
			5/8	2-1/2	.030CR	DRT5005004030R	DRT5015004030R	--
			1-1/4	3	Square	DRT5105004	DRT5115004	DRT5105005
			1-1/4	3	.015CR	DRT5105004015R	DRT5115004015R	--
			1-1/4	3	.030CR	DRT5105004030R	DRT5115004030R	DRT5105005030R
			1-1/4	3	.060CR	DRT5105004060R	DRT5115004060R	--
			2	4	Square	DRT5205004	DRT5215004	--
			2	4	.015CR	DRT5205004015R	DRT5215004015R	--
			2	4	.030CR	DRT5205004030R	DRT5215004030R	--
			2	4	.060CR	DRT5205004060R	DRT5215004060R	--
			3	6	Square	DRT5225004	--	--

P	●	Steel
M	○	Stainless Steel
K	●	Cast Iron
N	○	Non-Ferrous
S	○	High Temp. Alloys
H		Hardened Steel

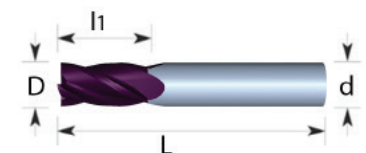
● BEST ○ OK ○ NOT OPTIMAL

- Variable Pitch To Reduce Chatter
- Ultra Premium Micrograin Carbide 10%
- TiALN Coated
- A Wide Variety of Lengths
- Square & Corner Radius
- Round & Weldon Shanks
- 38 Degree Helix
- Special Core Design to Enhance Strength
- Special Honing Process to Enhance Tool Life

TiALN (Titanium Aluminum Nitride) Blue/Grey Color; Provides better abrasion resistance & higher heat resistance to improve tool life over Bright Finish

Shank Tolerance:  
+0.0000"/-0.0004"

Diameter Tolerance:  
+0.0000"/-0.0015"



HP

<b>P</b>	●	Steel
<b>M</b>	○	Stainless Steel
<b>K</b>	●	Cast Iron
<b>N</b>	○	Non-Ferrous
<b>S</b>	○	High Temp. Alloys
<b>H</b>		Hardened Steel

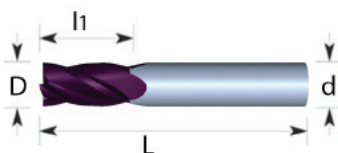
● **BEST** ○ **OK** ○ **NOT OPTIMAL**

- Variable Pitch To Reduce Chatter
- Ultra Premium Micrograin Carbide 10%
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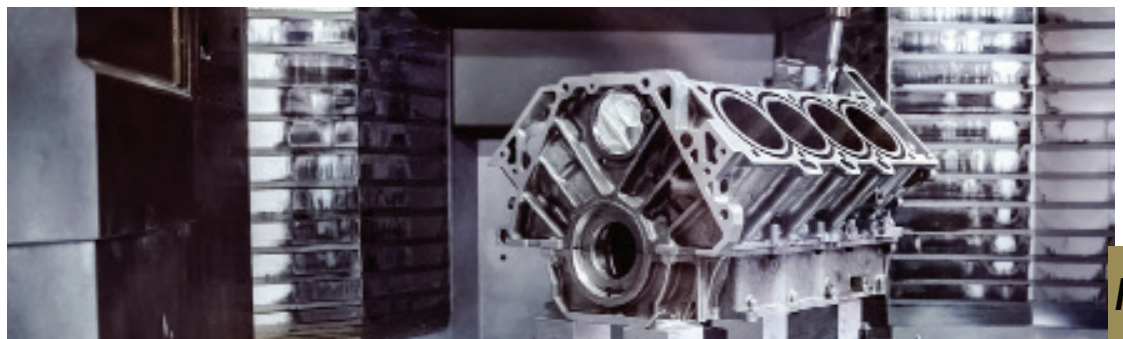
TiALN (Titanium Aluminum Nitride) Blue/Grey Color; Provides better abrasion resistance & higher heat resistance to improve tool life over Bright Finish

Shank Tolerance:  
+0.0000"/-0.0004"

Diameter Tolerance:  
+0.0000"/-0.0015"



HP High Performance Solid Carbide End Mills								
Diameter		Cut	Overall	End	TiALN	TiALN	TiALN	
D	Shank	Length	Length	Face	Round Shank	Weldon Shank	Round Shank	
Fract. Decimal	d	li	L		4 FL	4 FL	5 FL	
5/8	.6250	5/8	3/4	3	Square	DRT5006254	DRT5016254	--
			3/4	3	.030CR	DRT5006254030R	DRT5016254030R	--
			1-1/4	3-1/2	Square	DRT5106254	DRT5116254	DRT5106255
			1-1/4	3-1/2	.030CR	DRT5106254030R	DRT5116254030R	DRT5106255030R
			1-1/4	3-1/2	.060CR	DRT5106254060R	DRT5116254060R	--
			1-1/4	3-1/2	.125CR	DRT5106254125R	DRT5116254125R	--
			2-1/4	5	Square	DRT5206254	DRT5216254	--
			2-1/4	5	.030CR	DRT5206254030R	DRT5216254030R	--
			2-1/4	5	.060CR	DRT5206254060R	DRT5216254060R	--
			2-1/4	5	.125CR	DRT5206254125R	DRT5216254125R	--
3/4	.7500	3/4	3	6	Square	DRT5226254	--	--
			1	3	Square	DRT5007504	DRT5017504	--
			1	3	.030CR	DRT5007504030R	DRT5017504030R	--
			1-1/2	4	Square	DRT5107504	DRT5117504	DRT5107505
			1-1/2	4	.030CR	DRT5107504030R	DRT5117504030R	DRT5107505030R
			1-1/2	4	.060CR	DRT5107504060R	DRT5117504060R	--
			1-1/2	4	.125CR	DRT5107504125R	DRT5117504125R	--
			2-1/4	5	Square	DRT5207504	DRT5217504	--
			2-1/4	5	.030CR	DRT5207504030R	DRT5217504030R	--
			2-1/4	5	.060CR	DRT5207504060R	DRT5217504060R	--
1	1.0000	1	2-1/4	5	.125CR	DRT5207504125R	DRT5217504125R	--
			2-1/4	5	Square	DRT5227504	--	--
			1-1/2	4	Square	DRT5101004	DRT5111004	DRT5101005
			1-1/2	4	.030CR	DRT5101004030R	DRT5111004030R	DRT5101005030R
			1-1/2	4	.060CR	DRT5101004060R	DRT5111004060R	--
			1-1/2	4	.125CR	DRT5101004125R	DRT5111004125R	--
			2-1/4	5	Square	DRT5201004	DRT5211004	--
			2-1/4	5	.030CR	DRT5201004030R	DRT5211004030R	--
			2-1/4	5	.060CR	DRT5201004060R	DRT5211004060R	--
			2-1/4	5	.125CR	DRT5201004125R	DRT5211004125R	--
			3	6	Square	DRT5221004	--	--
			2	4	.015CR	DRT5205004015R	DRT5215004015R	--
			2	4	.030CR	DRT5205004030R	DRT5215004030R	--
			2	4	.060CR	DRT5205004060R	DRT5215004060R	--
			3	6	Square	DRT5225004	--	--





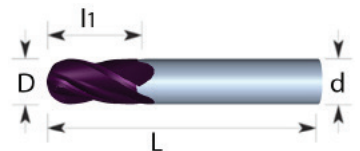
## Ball Nose HP High Performance Solid Carbide End Mills

Diameter D		Shank d	Cut Length l <sub>1</sub>	Overall Length L	End Face	TiAlN	
Fract.	Decimal					Round Shank 4 FL	Weldon Shank 4 FL
3/16	.1875	3/16	5/8	2	Ball Nose	DRT5151884	--
			3/4	2-1/2		DRT5251884	--
			1-1/8	3		DRT5301884	--
1/4	.2500	1/4	3/4	2-1/2	Ball Nose	DRT5152504	DRT5162504
			1-1/8	3		DRT5252504	DRT5262504
			1-1/2	4		DRT5302504	--
5/16	.3125	5/16	13/16	2-1/2	Ball Nose	DRT5153124	DRT5163124
			1-1/8	3		DRT5253124	DRT5263124
			1-5/8	4		DRT5303124	--
3/8	.3750	3/8	7/8	2-1/2	Ball Nose	DRT5153754	DRT5163754
			1-1/8	3		DRT5253754	DRT5263754
			1-3/4	4		DRT5303754	--
7/16	.4375	7/16	1	2-3/4	Ball Nose	DRT5154374	DRT5164374
			2	4		DRT5254374	DRT5264374
1/2	.5000	1/2	1	3	Ball Nose	DRT5155004	DRT5165004
			2	4		DRT5255004	DRT5265004
			3	6		DRT5305004	--
5/8	.6250	5/8	1-1/4	3-1/2	Ball Nose	DRT5156254	DRT5166254
			2-1/4	5		DRT5256254	DRT5266254
			3	6		DRT5306254	--
3/4	.7500	3/4	1-1/2	4	Ball Nose	DRT5157504	DRT5167504
			2-1/4	5		DRT5257504	DRT5267504
			3	6		DRT5307504	--
1	1.0000	1	1-1/2	4	Ball Nose	DRT5151004	DRT5161004
			2-1/4	5		DRT5251004	DRT5261004
			3	6		DRT5301004	--

P	●	Steel
M	⊖	Stainless Steel
K	●	Cast Iron
N	○	Non-Ferrous
S	⊖	High Temp. Alloys
H		Hardened Steel

● BEST ⊖ OK ○ NOT OPTIMAL

- Variable Pitch To Reduce Chatter
- Micrograin Carbide 10%
- TiAlN Coated
- A Wide Variety of Lengths
- Ball Nose
- Round & Weldon Shanks
- 38 Degree Helix
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- Special Honing Process to Enhance Tool Life



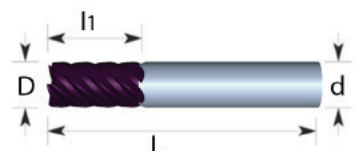
## HP High Performance Solid Carbide End Mills

Diameter D		Shank d	Cut Length l <sub>1</sub>	Overall Length L	End Face	TiAlN	
Fract.	Decimal					Round Shank 6 FL	Round Shank 7 FL
1/4	.2500	1/4	3/4	2-1/2	Square	DRT5192506	--
			3/4	2-1/2		.030CR	DRT5192506030R
3/8	.3750	3/8	7/8	2-1/2	Square	DRT5193756	--
			7/8	2-1/2		.030CR	DRT5193756030R
1/2	.5000	1/2	1-1/4	3	Square	DRT5195006	--
			1-1/4	3		.030CR	DRT5195006030R
5/8	.6250	5/8	1-1/4	3-1/2	Square	DRT5196256	--
			1-1/4	3-1/2		.030CR	DRT5196256030R
3/4	.7500	3/4	1-1/2	4	Square	DRT5197506	--
			1-1/2	4		.030CR	DRT5197506030R
1	1.0000	1	1-1/2	4	Square	DRT5191006	--
			1-1/2	4		.030CR	DRT5191006030R

TiAlN (Titanium Aluminum Nitride) Blue/Grey Color; Provides better abrasion resistance & higher heat resistance to improve tool life over Bright Finish

Shank Tolerance:  
+0.0000"/-0.0004"

Diameter Tolerance:  
+0.0000"/-0.0020"



# HP High Performance Speed & Feed Chart

Material Group	TiALN Coated	Feed Per Tooth By Diameter (Inches)								
		1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"	
Aluminum & Aluminum Alloys	N	900-1800	.0020	.0025	.0030	.0035	.0040	.0050	.0060	.0080
Copper & Copper Alloys	N	525-1275	.0020	.0025	.0025	.0030	.0030	.0035	.0040	.0060
Brass & Bronze	N	375-600	.0020	.0025	.0025	.0030	.0030	.0035	.0040	.0050
Graphite	N	500-1200	.0030	.0035	.0025	.0030	.0030	.0040	.0050	.0070
Plastics	N	600-1650	.0030	.0035	.0040	.0050	.0060	.0080	.0100	.0150
Soft Cast Iron	K	375-650	.0020	.0022	.0025	.0027	.0030	.0045	.0060	.0080
Hard Cast Iron		100-375	.0008	.0010	.0015	.0017	.0020	.0025	.0030	.0040
Ductile Iron		100-600	.0010	.0012	.0015	.0017	.0020	.0030	.0040	.0060
Malleable Iron		225-650	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0070
Low Carbon Steels	P	300-600	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0070
Medium Carbon Steels		150-375	.0015	.0016	.0017	.0018	.0020	.0030	.0040	.0050
Carbon Steels Hardened to 35 Rc		130-345	.0010	.0011	.0012	.0013	.0015	.0017	.0020	.0030
Carbon Steels Hardened to 50 Rc		70-160	.0007	.0007	.0008	.0009	.0010	.0015	.0020	.0030
Carbon Steels Hardened to 60 Rc		30-90	.0005	.0006	.0007	.0009	.0010	.0012	.0015	.0020
Mold Steels	P	300-525	.0010	.0012	.0015	.0017	.0020	.0025	.0030	.0040
Tool Steels		150-375	.0010	.0012	.0015	.0017	.0020	.0025	.0030	.0040
Soft Stainless Steels	M	300-450	.0010	.0012	.0015	.0012	.0020	.0030	.0040	.0060
Hard Stainless Steels		150-300	.0005	.0006	.0007	.0008	.0010	.0020	.0030	.0050
Monel & High Nickel Steel	S	75-200	.0010	.0012	.0015	.0017	.0020	.0025	.0030	.0040
Soft Titanium		125-375	.0010	.0012	.0015	.0017	.0020	.0030	.0040	.0060
Hard Titanium		50-175	.0005	.0006	.0007	.0008	.0010	.0015	.0020	.0020
Nickel Based High Temp Alloys		50-125	.0008	.0008	.0009	.0009	.0010	.0012	.0015	.0020

## TECHNICAL MACHINING POINTS:

- Use the lower end of the speed range for 40 Taper Machines & the higher end of the speed range for 50 Taper Machines.
- Higher feed per tooth should be used to start for radial depths of cut less than 25% of the tool diameter. Lower feed per tooth should be used to start for radial depths of cut greater than 25% of the tool diameter.
- The above recommendations are for axial lengths of cut not to exceed 1.5 times the tool diameter for profiling and 1 times the diameter for full slotting.
- The above parameters are recommended starting points only. If the tool is working well, without vibrations or significant noise, increase SFM and/or Feed Per Tooth in 5-10% increments.
- Optimum speeds & feeds will depend upon material, setup, machine conditions & tool deflection. Higher or lower parameters may be required to achieve optimum machining conditions.
- For lighter radial depths of cut, make certain to increase the feed rate to compensate for Radial Chip Thinning Factor (RCTF). Consult a formula or app to calculate.
- Climb milling is preferred to Conventional milling.



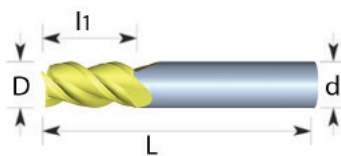
VIEW OR DOWNLOAD  
HP SPEED AND FEED CHART

**G-Alloy**

HP

# AL Aluminum Medium/Finishing

Diameter D		Shank d	Cut Length l <sub>1</sub>	Overall Length L	End Face	Bright Finish		ZrN	
Fract.	Decimal					2 FL	3 FL	2 FL	3 FL
1/8	.1250	1/8	1/2	1-1/2	Square	DRT6001252	DRT6001253	--	--
3/16	.1875	3/16	5/8	2	Square	DRT6001882	DRT6001883	DRT6011882	DRT6011883
			3/4	2-1/2	Square	DRT6101882	DRT6101883	DRT6111882	DRT6111883
			1-1/8	3	Square	DRT6201882	DRT6201883	DRT6211882	DRT6211883
1/4	.2500	1/4	3/4	2-1/2	Square	DRT6002502	DRT6002503	DRT6012502	DRT6012503
			3/4	2-1/2	.020CR	DRT6002502020R	DRT6002503020R	DRT6012502020R	DRT6012503020R
			1-1/8	3	Square	DRT6102502	DRT6102503	DRT6112502	DRT6112503
			1-1/2	4	Square	DRT6202502	DRT6202503	DRT6212502	DRT6212503
5/16	.3125	5/16	13/16	2-1/2	Square	DRT6003122	DRT6003123	DRT6013122	DRT6013123
			13/16	2-1/2	.020CR	DRT6003122020R	DRT6003123020R	DRT6013122020R	DRT6013123020R
			1-1/8	3	Square	DRT6103122	DRT6103123	DRT6113122	DRT6113123
			1-5/8	4	Square	DRT6203122	DRT6203123	DRT6213122	DRT6213123
3/8	.3750	3/8	1	2-1/2	Square	DRT6003752	DRT6003753	DRT6013752	DRT6013753
			1	2-1/2	.020CR	DRT6003752020R	DRT6003753020R	DRT6013752020R	DRT6013753020R
			1-1/8	3	Square	DRT6103752	DRT6103753	DRT6113752	DRT6113753
			1-3/4	4	Square	DRT6203752	DRT6203753	DRT6213752	DRT6213753
1/2	.5000	1/2	1-1/4	3	Square	DRT6005002	DRT6005003	DRT6015002	DRT6015003
			1-1/4	3	.030CR	DRT6005002030R	DRT6005003030R	DRT6015002030R	DRT6015003030R
			2	4	Square	DRT6105002	DRT6105003	DRT6115002	DRT6115003
			3	6	Square	DRT6205002	DRT6205003	DRT6215002	DRT6215003
5/8	.6250	5/8	1-1/4	3-1/2	Square	DRT6006252	DRT6006253	DRT6016252	DRT6016253
			1-1/4	3-1/2	.030CR	DRT6006252030R	DRT6006253030R	DRT6016252030R	DRT6016253030R
			2-1/4	5	Square	DRT6106252	DRT6106253	DRT6116252	DRT6116253
			3	6	Square	DRT6206252	DRT6206253	DRT6216252	DRT6216253
3/4	.7500	3/4	1-1/2	4	Square	DRT6007502	DRT6007503	DRT6017502	DRT6017503
			1-1/2	4	.030CR	DRT6007502030R	DRT6007503030R	DRT6017502030R	DRT6017503030R
			2-1/4	5	Square	DRT6107502	DRT6107503	DRT6117502	DRT6117503
			3	6	Square	DRT6207502	DRT6207503	DRT6217502	DRT6217503
1	1.0000	1	1-1/2	4	Square	DRT6001002	DRT6001003	DRT6011002	DRT6011003
			1-1/2	4	.030CR	DRT6001002030R	DRT6001003030R	DRT6011002030R	DRT6011003030R
			2-1/4	5	Square	DRT6101002	DRT6101003	DRT6111002	DRT6111003
			3	6	Square	DRT6201002	DRT6201003	DRT6211002	DRT6211003



- Variable Pitch To Reduce Chatter
- Ultra Premium Carbide Grade
- Bright & ZrN Coated
- 45 Degree Helix
- Square End, Corner Radius
- Cylindrical Margin Provides Stability
- Chipbreaker Within Flute Design

P	Steel
M	Stainless Steel
K	Cast Iron
N	● Non-Ferrous
S	High Temp. Alloys
H	Hardened Steel

● BEST

Shank Tolerance: +0.0000"/-0.0004"

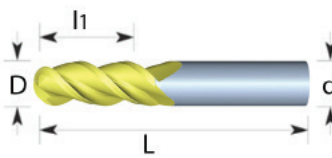
Diameter Tolerance: +0.0000"/-0.0004"

ZrN (Zirconium Nitride) Pale Yellow Color; Provides high lubricity & higher heat resistance to improve tool life over Bright Finish for machining Aluminum & Non-Ferrous materials



# Ball Nose AL Aluminum Medium/Finishing

Diameter D		Shank d	Cut Length l <sub>1</sub>	Overall Length L	End Face	Bright Finish		ZrN	
Fract.	Decimal					2 FL	3 FL	2 FL	3 FL
3/16	.1875	3/16	5/8	2	Ball Nose	DRT6051882	DRT6051883	DRT6061882	DRT6061883
			3/4	2-1/2	Ball Nose	DRT6151882	DRT6151883	DRT6161882	DRT6161883
			1-1/8	3	Ball Nose	DRT6251882	DRT6251883	DRT6261882	DRT6261883
1/4	.2500	1/4	3/4	2-1/2	Ball Nose	DRT6052502	DRT6052503	DRT6062502	DRT6062503
			1-1/8	3	Ball Nose	DRT6152502	DRT6152503	DRT6162502	DRT6162503
			1-1/2	4	Ball Nose	DRT6252502	DRT6252503	DRT6262502	DRT6262503
5/16	.3125	5/16	13/16	2-1/2	Ball Nose	DRT6053122	DRT6053123	DRT6063122	DRT6063123
			1-1/8	3	Ball Nose	DRT6153122	DRT6153123	DRT6163122	DRT6163123
			1-5/8	4	Ball Nose	DRT6253122	DRT6253123	DRT6263122	DRT6263123
3/8	.3750	3/8	1	2-1/2	Ball Nose	DRT6053752	DRT6053753	DRT6063752	DRT6063753
			1-1/8	3	Ball Nose	DRT6153752	DRT6153753	DRT6163752	DRT6163753
			1-3/4	4	Ball Nose	DRT6253752	DRT6253753	DRT6263752	DRT6263753
1/2	.5000	1/2	1-1/4	3	Ball Nose	DRT6055002	DRT6055003	DRT6065002	DRT6065003
			2	4	Ball Nose	DRT6155002	DRT6155003	DRT6165002	DRT6165003
			3	6	Ball Nose	DRT6255002	DRT6255003	DRT6265002	DRT6265003
5/8	.6250	5/8	1-1/4	3-1/2	Ball Nose	DRT6056252	DRT6056253	DRT6066252	DRT6066253
			2-1/4	5	Ball Nose	DRT6156252	DRT6156253	DRT6166252	DRT6166253
			3	6	Ball Nose	DRT6256252	DRT6256253	DRT6266252	DRT6266253
3/4	.7500	3/4	1-1/2	4	Ball Nose	DRT6057502	DRT6057503	DRT6067502	DRT6067503
			2-1/4	5	Ball Nose	DRT6157502	DRT6157503	DRT6167502	DRT6167503
			3	6	Ball Nose	DRT6257502	DRT6257503	DRT6267502	DRT6267503
1	1.0000	1	1-1/2	4	Ball Nose	DRT6051002	DRT6051003	DRT6061002	DRT6061003
			2-1/4	5	Ball Nose	DRT6151002	DRT6151003	DRT6161002	DRT6161003
			3	6	Ball Nose	DRT6251002	DRT6251003	DRT6261002	DRT6261003



- Variable Pitch To Reduce Chatter
- Ultra Premium Carbide Grade
- Bright & ZrN Coated
- 45 Degree Helix
- Ball Nose
- Cylindrical Margin Provides Stability
- Chipbreaker Within Flute Design

P	Steel
M	Stainless Steel
K	Cast Iron
N	● Non-Ferrous
S	High Temp. Alloys
H	Hardened Steel

● BEST

Shank Tolerance: +0.0000"/-0.0004"

Diameter Tolerance: +0.0000"/-0.0004"

**G-Alloy**

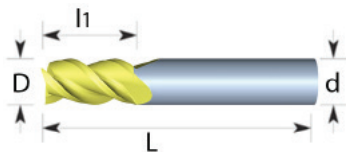
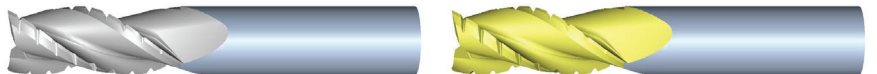
ZrN (Zirconium Nitride) Pale Yellow Color; Provides high lubricity & higher heat resistance to improve tool life over Bright Finish for machining Aluminum & Non-Ferrous materials

AL

# AL Aluminum Medium/Roughing

Diameter		Shank	Cut Length	Overall Length	End Face	Bright Finish		ZrN	
Fract.	Decimal					d	l <sub>1</sub>	L	3 FL
1/4	.2500	1/4	3/4	2-1/2	SQ	DRT6302503	--	DRT6312503	--
					.015CR	DRT6302503015R	--	DRT6312503015R	--
					.030CR	DRT6302503030R	--	--	--
					.060CR	DRT6302503060R	--	--	--
5/16	.3125	5/16	13/16	2-1/2	SQ	DRT6303123	--	DRT6313123	--
					.030CR	DRT6303123030R	--	DRT6313123030R	--
					.060CR	DRT6303123060R	--	--	--
3/8	.3750	3/8	1	2-1/2	SQ	DRT6303753	--	DRT6313753	--
			1	2-1/2	.030CR	DRT6303753030R	DRT6453753030R	DRT6313753030R	DRT6463753030R
			1	2-1/2	.060CR	DRT6303753060R	--	--	--
			1-1/8	3	SQ	DRT6353753	--	DRT6363753	--
			1-1/8	3	.030CR	DRT6353753030R	DRT6553753030R	DRT6363753030R	DRT6563753030R
1/2	.5000	1/2	1-1/4	3	SQ	DRT6305003	--	DRT6315003	--
			1-1/4	3	.030CR	DRT6305003030R	DRT6455003030R	DRT6315003030R	DRT6465003030R
			1-1/4	3	.060CR	DRT6305003060R	--	--	--
			1-1/4	3	.090CR	DRT6305003090R	--	--	--
			1-1/4	3	.120CR	DRT6305003120R	--	--	--
			2	4	SQ	DRT6355003	--	DRT6365003	--
			2	4	.030CR	DRT6355003030R	DRT6555003030R	DRT6365003030R	DRT6565003030R
5/8	.6250	5/8	1-1/4	3-1/2	SQ	DRT6306253	--	DRT6316253	--
			1-1/4	3-1/2	.030CR	DRT6306253030R	DRT6456253030R	DRT6316253030R	DRT6466253030R
			1-1/4	3-1/2	.060CR	DRT6306253060R	--	--	--
			1-1/4	3-1/2	.090CR	DRT6306253090R	--	--	--
			1-1/4	3-1/2	.120CR	DRT6306253120R	--	--	--
			2-1/4	5	SQ	DRT6356253	--	DRT6366253	--
			2-1/4	5	.030CR	DRT6356253030R	DRT6556253030R	DRT6366253030R	DRT6566253030R
			2-1/4	5	.030CR	DRT6351003030R	DRT6551003030R	DRT6361003030R	DRT6561003030R

## Optional O/D Chipbreaker Style



- Variable Pitch To Reduce Chatter
- Ultra Premium Carbide Grade
- Bright & ZrN Coated
- 36 Degree Helix
- For Medium & Roughing Jobs
- Square End, Corner Radius
- Cylindrical Margin Provides Stability
- Chipbreaker Within Flute Design
- O/D Chipbreaker Available

P	Steel
M	Stainless Steel
K	Cast Iron
N	● Non-Ferrous
S	High Temp. Alloys
H	Hardened Steel

● BEST

Shank Tolerance: +0.0000"/-0.0004"

Diameter Tolerance: +0.0000"/-0.0004"

ZrN (Zirconium Nitride) Pale Yellow Color; Provides high lubricity & higher heat resistance to improve tool life over Bright Finish for machining Aluminum & Non-Ferrous materials

## AL Aluminum Medium/Roughing

Diameter		Shank	Cut Length	Overall Length	End Face	Bright Finish		ZrN	
D						Chipbreaker	Chipbreaker	Chipbreaker	Chipbreaker
Fract.	Decimal	d	l <sub>c</sub>	L		3 FL	3 FL	3 FL	3 FL
3/4	.7500	3/4	1-5/8	4	SQ	DRT6307503	--	DRT6317503	--
			1-5/8	4	.030CR	DRT6307503030R	DRT6457503030R	DRT6317503030R	DRT6467503030R
			1-5/8	4	.060CR	DRT6307503060R	--	--	--
			1-5/8	4	.090CR	DRT6307503090R	--	--	--
			1-5/8	4	.120CR	DRT6307503120R	--	--	--
			2-1/4	5	SQ	DRT6357503	--	DRT6367503	--
			2-1/4	5	.030CR	DRT6357503030R	DRT6557503030R	DRT6367503030R	DRT6567503030R
1	1.0000	1	1-1/2	4	SQ	DRT6301003	--	DRT6311003	--
			1-1/2	4	.030CR	DRT6301003030R	DRT6451003030R	DRT6311003030R	DRT6461003030R
			1-1/2	4	.060CR	DRT6301003060R	--	--	--
			1-1/2	4	.120CR	DRT6301003120R	--	--	--
			2-1/4	5	SQ	DRT6351003	--	DRT6361003	--
			2-1/4	5	.030CR	DRT6351003030R	DRT6551003030R	DRT6361003030R	DRT6561003030R

## AL Aluminum Speed & Feed Chart

Material Group	ZrN Coated	Feed Per Tooth By Diameter (Inches)							
		1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"
Aluminum & Aluminum Alloys	N	.0030	.0035	.0040	.0045	.0050	.0060	.0070	.0090
Copper & Copper Alloys	N	.0030	.0035	.0035	.0040	.0040	.0045	.0050	.0070
Brass & Bronze	N	.0030	.0035	.0035	.0040	.0040	.0045	.0050	.0060
Graphite	N	.0040	.0045	.0045	.0045	.0045	.0050	.0060	.0080
Plastics	N	.0040	.0045	.0050	.0060	.0070	.0090	.0110	.0160

### TECHNICAL MACHINING POINTS:

- Use the lower end of the speed range for 40 Taper Machines & the higher end of the speed range for 50 Taper Machines.
- Higher feed per tooth should be used to start for radial depths of cut less than 25% of the tool diameter. Lower feed per tooth should be used to start for radial depths of cut greater than 25% of the tool diameter.
- The above recommendations are for axial lengths of cut not to exceed 1.5 times the tool diameter for profiling and 1 times the diameter for full slotting.
- The above parameters are recommended starting points only. If the tool is working well, without vibrations or significant noise, increase SFM and/or Feed Per Tooth in 5-10% increments.
- Optimum speeds & feeds will depend upon material, setup, machine conditions & tool deflection. Higher or lower parameters may be required to achieve optimum machining conditions.
- For lighter radial depths of cut, make certain to increase the feed rate to compensate for Radial Chip Thinning Factor (RCTF). Consult a formula or app to calculate.
- Climb milling is preferred to Conventional milling.



VIEW OR DOWNLOAD  
AL SPEED AND FEED CHART



AL



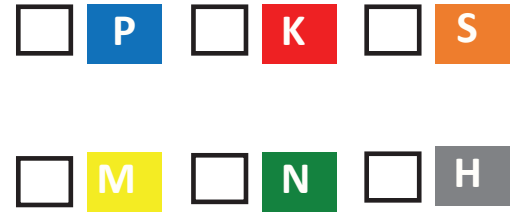
# SPECIAL END MILL FORM

## Specifications

### Modified Stock Standards

- Available in our Series: **VP** **HP** **AL**
- 3/16"-1" Stock Standard Items from the catalog with your own custom Corner Radius
- 4-5 Business Days Delivery
- Pricing the Same as the Stock Standard Item
- Minimum Order Quantity Amounts Apply as Below

### Material



Stock Standard Part Number: \_\_\_\_\_

Manufacturing Number: \_\_\_\_\_

Required Corner Radius: \_\_\_\_\_

Manufacturing Series: \_\_\_\_\_

Shank Tolerance: +0.0000"/-0.0004" Diameter Tolerance: +0.0000"/-0.0020"

Quantity: \_\_\_\_\_

Tool Diameter (D) \_\_\_\_\_ \*Available Diameter Range: 3/16"-1" or 4mm-25mm

Cut Length Range (l<sub>1</sub>) \_\_\_\_\_ Overall Length Range (L) \_\_\_\_\_  
 Min l<sub>1</sub> Max l<sub>1</sub> Min L Max L

Shank Diameter (d) \_\_\_\_\_ \*Cannot be smaller than Tool Diameter Above Number of Flutes \_\_\_\_\_

### End Face:

- Square
- Ball Nose
- Corner Radius  \_\_\_\_\_  
 Corner Radius

### Coating:

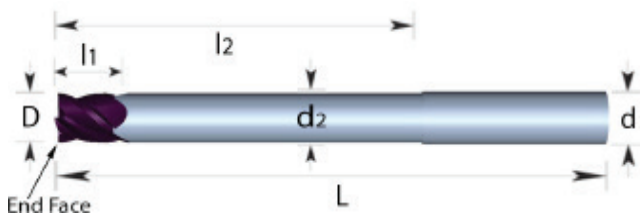
- Uncoated
- TiALN
- ZrN

### Shank Type:

- Round
- Weldon

### Neck Relief: \*Optional

- Length Below Shank (l<sub>2</sub>) \_\_\_\_\_
- Neck Diameter (d<sub>2</sub>) \_\_\_\_\_



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### Special End Mill Minimum Order Quantities

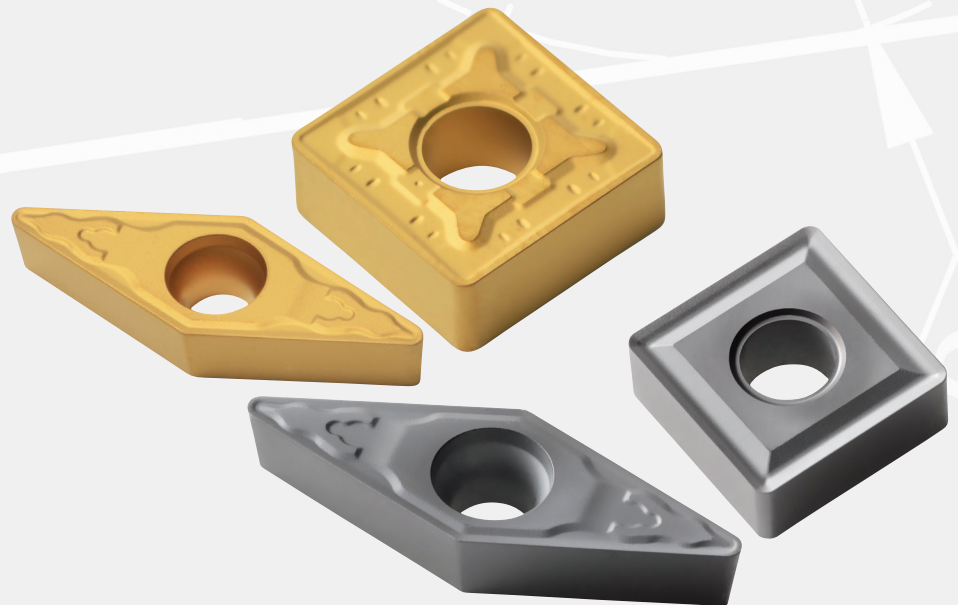
Tool Diameter Range	Minimum Order Qty.
Under 3/16" (4mm)	Not Available
3/16"-1/4" (4mm-6mm)	20
5/16"-3/8" (7mm-10mm)	15
7/16"-1/2" (11mm-12mm)	10
9/16"-3/4" (13mm-20mm)	5
7/8"-1" (25mm)	3

# TURNING TOOLS

DGI SUPPLY ALSO OFFERS A WIDE VARIETY OF ANSI / ISO STANDARD TURNING INSERTS FOR MOST EXTERNAL TURNING AND INTERNAL MACHINING OPERATIONS.

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