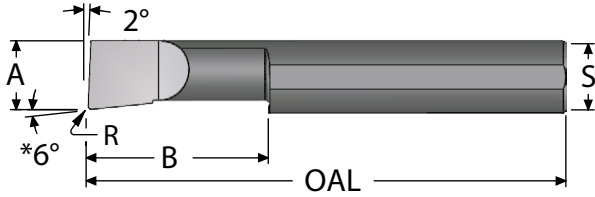


# RADIUS BORING BARS - SOLID CARBIDE



- ALTiN+ coating extends tool life
- Polished flute face for optimum performance
- Corner radius ensures strength and better surface finish

"A" MIN BORE	"B" MAX DEPTH	"R" RADIUS ±0.001	"S" SHANK DIA.	OAL	ORDER #		EDP #	
					UNCOATED	AITiN+	UNCOATED	AITiN+
0.050	0.150	0.004	0.125	1.50	B050150R	B050150RA	213348	214134
0.050	0.200	0.004	0.125	1.50	B050200R	B050200RA	213351	214137
0.050	0.300	0.004	0.125	1.50	B050300R	B050300RA	213354	214140
0.050	0.400	0.004	0.125	1.50	B050400R	B050400RA	213357	214143
0.060	0.150	0.004	0.125	1.50	B060150R	B060150RA	213360	214146
0.060	0.200	0.004	0.125	1.50	B060200R	B060200RA	213363	214149
0.060	0.300	0.004	0.125	1.50	B060300R	B060300RA	213366	214152
0.060	0.400	0.004	0.125	1.50	B060400R	B060400RA	213369	214155
0.060	0.500	0.004	0.125	1.50	B060500R	B060500RA	213372	214158
0.080	0.150	0.004	0.125	1.50	B080150R	B080150RA	213375	214161
0.080	0.200	0.004	0.125	1.50	B080200R	B080200RA	213378	214164
0.080	0.300	0.004	0.125	1.50	B080300R	B080300RA	213381	214167
0.080	0.400	0.004	0.125	1.50	B080400R	B080400RA	213384	214170
0.080	0.500	0.004	0.125	1.50	B080500R	B080500RA	213387	214173
0.080	0.600	0.004	0.125	1.50	B080600R	B080600RA	213390	214176
0.100	0.150	0.004	0.125	1.50	B100150R	B100150RA	213393	214179
0.100	0.200	0.004	0.125	1.50	B100200R	B100200RA	213396	214182
0.100	0.300	0.004	0.125	1.50	B100300R	B100300RA	213399	214185
0.100	0.400	0.004	0.125	1.50	B100400R	B100400RA	213402	214188
0.100	0.500	0.004	0.125	1.50	B100500R	B100500RA	213405	214191
0.100	0.600	0.004	0.125	1.50	B100600R	B100600RA	213408	214194
0.100	0.700	0.004	0.125	1.50	B100700R	B100700RA	213411	214197
0.110	0.150	0.004	0.125	1.50	B110150R	B110150RA	213414	214200
0.110	0.200	0.004	0.125	1.50	B110200R	B110200RA	213417	214203
0.110	0.300	0.004	0.125	1.50	B110300R	B110300RA	213420	214206
0.110	0.400	0.004	0.125	1.50	B110400R	B110400RA	213423	214209
0.110	0.500	0.004	0.125	1.50	B110500R	B110500RA	213426	214212
0.110	0.600	0.004	0.125	1.50	B110600R	B110600RA	213429	214215
0.110	0.700	0.004	0.125	1.50	B110700R	B110700RA	213432	214218
0.120	0.250	0.0065	0.1875	2.00	B120250R	B120250RA	213435	214221
0.120	0.350	0.0065	0.1875	2.00	B120350R	B120350RA	213438	214224
0.120	0.500	0.0065	0.1875	2.00	B120500R	B120500RA	213441	214227
0.120	0.600	0.0065	0.1875	2.00	B120600R	B120600RA	213444	214230
0.120	0.700	0.0065	0.1875	2.00	B120700R	B120700RA	213447	214233
0.120	0.800	0.0065	0.1875	2.00	B120800R	B120800RA	213450	214236

"A" MIN BORE	"B" MAX DEPTH	"R" RADIUS ±0.001	"S" SHANK DIA.	OAL	ORDER #		EDP #	
					UNCOATED	AITiN+	UNCOATED	AITiN+
0.140	0.250	0.0065	0.1875	2.00	B140250R	B140250RA	213453	214239
0.140	0.400	0.0065	0.1875	2.00	B140400R	B140400RA	213456	214242
0.140	0.500	0.0065	0.1875	2.00	B140500R	B140500RA	213459	214245
0.140	0.600	0.0065	0.1875	2.00	B140600R	B140600RA	213462	214248
0.140	0.700	0.0065	0.1875	2.00	B140700R	B140700RA	213465	214251
0.140	0.750	0.0065	0.1875	2.00	B140750R	B140750RA	213468	214254
0.140	0.800	0.0065	0.1875	2.00	B140800R	B140800RA	213471	214257
0.160	0.250	0.0065	0.1875	2.00	B160250R	B160250RA	213477	214263
0.160	0.400	0.0065	0.1875	2.00	B160400R	B160400RA	213480	214266
0.160	0.500	0.0065	0.1875	2.00	B160500R	B160500RA	213483	214269
0.160	0.600	0.0065	0.1875	2.00	B160600R	B160600RA	213486	214272
0.160	0.750	0.0065	0.1875	2.00	B160750R	B160750RA	213489	214275
0.160	0.900	0.0065	0.1875	2.00	B160900R	B160900RA	213492	214278
0.160	1.000	0.0065	0.1875	2.00	B1601000R	B1601000RA	213474	214260
0.180	0.350	0.0065	0.250	2.50	B180350R	B180350RA	213507	214293
0.180	0.500	0.0065	0.250	2.50	B180500R	B180500RA	213510	214296
0.180	0.600	0.0065	0.250	2.50	B180600R	B180600RA	213513	214299
0.180	0.750	0.0065	0.250	2.50	B180750R	B180750RA	213516	214302
0.180	0.900	0.0065	0.250	2.50	B180900R	B180900RA	213519	214305
0.180	1.000	0.0065	0.250	2.50	B1801000R	B1801000RA	213495	214281
0.180	1.100	0.0065	0.250	2.50	B1801100R	B1801100RA	213498	214284
0.180	1.250	0.0065	0.250	2.50	B1801250R	B1801250RA	213501	214287
0.180	1.500	0.0065	0.250	2.50	B1801500R	B1801500RA	213504	214290
0.200	0.400	0.0065	0.250	2.50	B200400R	B200400RA	213534	214320
0.200	0.500	0.0065	0.250	2.50	B200500R	B200500RA	213537	214323
0.200	0.600	0.0065	0.250	2.50	B200600R	B200600RA	213540	214326
0.200	0.700	0.0065	0.250	2.50	B200700R	B200700RA	213543	214329
0.200	0.800	0.0065	0.250	2.50	B200800R	B200800RA	213546	214332
0.200	0.900	0.0065	0.250	2.50	B200900R	B200900RA	213549	214335
0.200	1.000	0.0065	0.250	2.50	B2001000R	B2001000RA	213522	214308
0.200	1.100	0.0065	0.250	2.50	B2001100R	B2001100RA	213525	214311
0.200	1.200	0.0065	0.250	2.50	B2001200R	B2001200RA	213528	214314
0.200	1.300	0.0065	0.250	2.50	B2001300R	B2001300RA	213531	214317

\* The B050 and the B060 series have 3° side clearance.

THREAD MILLS

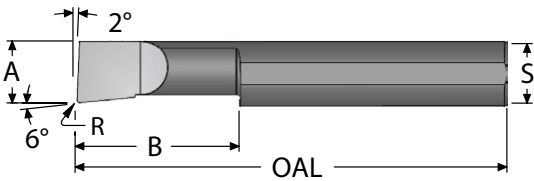
SINGLE POINT TOOLS  
BORING

INDEXABLE TOOLS

PORT - CAVITY

SPECIALTY

# RADIUS BORING BARS - SOLID CARBIDE



- Elliptically ground neck provides maximum strength
- Made with premium submicron grade carbide
- ALTiN+ coating for higher Surface Feet per Minute

"A" MIN BORE	"B" MAX DEPTH	"R" RADIUS ±0.001	"S" SHANK DIA.	OAL	ORDER #		EDP #	
					UNCOATED	AITIN+	UNCOATED	AITIN+
0.230	0.400	0.0065	0.3125	2.50	B230400R	B230400RA	213576	214362
0.230	0.500	0.0065	0.3125	2.50	B230500R	B230500RA	213579	214365
0.230	0.600	0.0065	0.3125	2.50	B230600R	B230600RA	213582	214368
0.230	0.700	0.0065	0.3125	2.50	B230700R	B230700RA	213585	214371
0.230	0.800	0.0065	0.3125	2.50	B230800R	B230800RA	213588	214374
0.230	0.900	0.0065	0.3125	2.50	B230900R	B230900RA	213591	214377
0.230	1.000	0.0065	0.3125	2.50	B2301000R	B2301000RA	213552	214338
0.230	1.100	0.0065	0.3125	2.50	B2301100R	B2301100RA	213555	214341
0.230	1.150	0.0065	0.3125	2.50	B2301150R	B2301150RA	213558	214344
0.230	1.200	0.0065	0.3125	2.50	B2301200R	B2301200RA	213561	214347
0.230	1.250	0.0065	0.3125	2.50	B2301250R	B2301250RA	213564	214350
0.230	1.400	0.0065	0.3125	2.50	B2301400R	B2301400RA	213567	214353
0.230	1.500	0.0065	0.3125	2.50	B2301500R	B2301500RA	213570	214356
0.230	1.600	0.0065	0.3125	3.00	B2301600R	B2301600RA	213573	214359
0.290	0.500	0.0065	0.3125	2.50	B290500R	B290500RA	213615	214401
0.290	0.600	0.0065	0.3125	2.50	B290600R	B290600RA	213618	214404
0.290	0.750	0.0065	0.3125	2.50	B290750R	B290750RA	213621	214407
0.290	0.900	0.0065	0.3125	2.50	B290900R	B290900RA	213624	214410
0.290	1.000	0.0065	0.3125	2.50	B2901000R	B2901000RA	213594	214380
0.290	1.100	0.0065	0.3125	2.50	B2901100R	B2901100RA	213597	214383
0.290	1.250	0.0065	0.3125	2.50	B2901250R	B2901250RA	213600	214386
0.290	1.350	0.0065	0.3125	2.50	B2901350R	B2901350RA	213603	214389
0.290	1.500	0.0065	0.3125	2.50	B2901500R	B2901500RA	213606	214392
0.290	1.600	0.0065	0.3125	3.00	B2901600R	B2901600RA	213609	214395
0.290	1.750	0.0065	0.3125	3.00	B2901750R	B2901750RA	213612	214398
0.320	0.500	0.0065	0.375	2.50	B320500R	B320500RA	213654	214440
0.320	0.600	0.0065	0.375	2.50	B320600R	B320600RA	213657	214443
0.320	0.750	0.0065	0.375	2.50	B320750R	B320750RA	213660	214446
0.320	0.900	0.0065	0.375	2.50	B320900R	B320900RA	213663	214449
0.320	1.000	0.0065	0.375	2.50	B3201000R	B3201000RA	213627	214413
0.320	1.100	0.0065	0.375	2.50	B3201100R	B3201100RA	213630	214416
0.320	1.250	0.0065	0.375	2.50	B3201250R	B3201250RA	213633	214419
0.320	1.500	0.0065	0.375	2.50	B3201500R	B3201500RA	213636	214422
0.320	1.600	0.0065	0.375	3.00	B3201600R	B3201600RA	213639	214425
0.320	1.800	0.0065	0.375	3.00	B3201800R	B3201800RA	213642	214428
0.320	2.000	0.0065	0.375	4.00	B3202000R	B3202000RA	213645	214431
0.320	2.500	0.0065	0.375	4.00	B3202500R	B3202500RA	213648	214434
0.320	3.000	0.0065	0.375	4.00	B3203000R	B3203000RA	213651	214437

"A" MIN BORE	"B" MAX DEPTH	"R" RADIUS ±0.001	"S" SHANK DIA.	OAL	ORDER #		EDP #	
					UNCOATED	AITIN+	UNCOATED	AITIN+
0.360	0.500	0.0065	0.375	2.50	B360500R	B360500RA	213693	214479
0.360	0.600	0.0065	0.375	2.50	B360600R	B360600RA	213696	214482
0.360	0.750	0.0065	0.375	2.50	B360750R	B360750RA	213699	214485
0.360	0.900	0.0065	0.375	2.50	B360900R	B360900RA	213702	214488
0.360	1.000	0.0065	0.375	2.50	B3601000R	B3601000RA	213666	214452
0.360	1.150	0.0065	0.375	2.50	B3601150R	B3601150RA	213669	214455
0.360	1.250	0.0065	0.375	2.50	B3601250R	B3601250RA	213672	214458
0.360	1.500	0.0065	0.375	2.50	B3601500R	B3601500RA	213675	214461
0.360	1.600	0.0065	0.375	3.00	B3601600R	B3601600RA	213678	214464
0.360	1.800	0.0065	0.375	3.00	B3601800R	B3601800RA	213681	214467
0.360	2.000	0.0065	0.375	4.00	B3602000R	B3602000RA	213684	214470
0.360	2.500	0.0065	0.375	4.00	B3602500R	B3602500RA	213687	214473
0.360	3.000	0.0065	0.375	4.00	B3603000R	B3603000RA	213690	214476
0.490	0.750	0.0065	0.500	3.00	B490750R	B490750RA	213738	214524
0.490	1.000	0.0065	0.500	3.00	B4901000R	B4901000RA	213705	214491
0.490	1.250	0.0065	0.500	3.00	B4901250R	B4901250RA	213708	214494
0.490	1.500	0.0065	0.500	3.00	B4901500R	B4901500RA	213711	214497
0.490	2.000	0.0065	0.500	4.00	B4902000R	B4902000RA	213714	214500
0.490	2.500	0.0065	0.500	4.00	B4902500R	B4902500RA	213717	214503
0.490	2.600	0.0065	0.500	4.00	B4902600R	B4902600RA	213720	214506
0.490	2.750	0.0065	0.500	4.00	B4902750R	B4902750RA	213723	214509
0.490	3.000	0.0065	0.500	6.00	B4903000R	B4903000RA	213726	214512
0.490	3.500	0.0065	0.500	6.00	B4903500R	B4903500RA	213729	214515
0.490	4.000	0.0065	0.500	6.00	B4904000R	B4904000RA	213732	214518
0.490	4.500	0.0065	0.500	6.00	B4904500R	B4904500RA	213735	214521

THREAD MILLS

SINGLE POINT TOOLS  
BORING

INDEXABLE TOOLS

PORT - CAVITY

SPECIALTY

# SOLID CARBIDE BORING BAR FEED AND SPEED CHART

MATERIAL	HB/Rc	SPEED (SFM)		FEED IPR	CUTTING CONDITIONS					
		UNCOATED	ALTiN+		TOOL DIAMETER					
					.015-.045	.050-.100	.110-.160	.180-.230	.290-.320	.360+
					MAX DOC	MAX DOC	MAX DOC	MAX DOC	MAX DOC	MAX DOC
CAST IRON	160 HB	75-200	200-550	.0005-.010	0.006	0.008	0.010	0.014	0.020	0.031
CARBON STEEL	18 Rc	75-200	200-450	.0005-.007	0.003	0.005	0.006	0.008	0.012	0.017
ALLOY STEEL	20 Rc	75-200	200-425	.0005-.007	0.003	0.004	0.005	0.007	0.010	0.015
TOOL STEEL	25 Rc	75-175	175-300	.0005-.005	0.002	0.003	0.004	0.006	0.008	0.012
300 STAINLESS STEEL	150 HB	75-175	175-350	.0005-.005	0.003	0.003	0.004	0.006	0.008	0.013
400 STAINLESS STEEL	195 HB	75-210	130-420	.0005-.005	0.002	0.003	0.004	0.006	0.008	0.012
HIGH TEMP ALLOY (Ni & Co BASE)	20 Rc	50-130	130-300	.0005-.004	0.002	0.003	0.003	0.005	0.007	0.010
TITANIUM	25 Rc	50-120	120-275	.0005-.005	0.003	0.004	0.005	0.006	0.009	0.014
HEAT TREATED ALLOYS (38-45Rc)	40 Rc	50-100	100-200	.0005-.005	0.002	0.002	0.003	0.004	0.006	0.009
ALUMINUM	100 HB	75-250	250-750	.0005-.015	0.011	0.015	0.019	0.026	0.038	0.056
BRASS, ZINC	80 HB	75-300	250-650	.001-.010	0.009	0.012	0.015	0.021	0.030	0.045

SFM = Surface Feet Per Minute    DOC = Depth of Cut    IPR = Inches Per Revolution

Starting parameters only. Length-to-diameter ratios, setup, and machine rigidity may affect performance.

$$\text{SFM} = .262 \times \text{DIAMETER} \times \text{RPM}$$

$$\text{RPM} = 3.82 \times \text{SFM} \div \text{DIAMETER}$$

$$\text{IPM} = \text{FPT} \times \text{Number of Teeth} \times \text{RPM}$$

$$\text{Meters/Min} = \text{SFM} \times .3048$$

$$\text{Millimeters/Rev} = \text{IPR} \times 25.40$$

# SOLID CARBIDE BORING TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
RAPID FLANK WEAR	CUTTING CONDITIONS	Check for excessive speed and feed - See chart.
	TOOL	Select a coated tool.
	PART	Make sure prior operation did not work harden the metal.
BUILT-UP EDGE	TOOL	Select a coated tool.
	CUTTING FORCE	Check for excessive feed rate (IPR) - See chart.
	HEAT	Use the SCT coolant holder. If coolant is not available, use shop air and a coated tool.
CORNER BREAKAGE	CUTTING CONDITIONS	Check for excessive feed and speed and depth of cut - see chart.
	TOOL	Select a tool with a radius. A radius is stronger than a sharp corner.
	PART	Check the drilled hole.
SURFACE TOO ROUGH	CUTTING CONDITIONS	Check for excessive feed rate (IPR) - See chart.
	BUILT-UP EDGE	See above (Built-Up Edge).
CHATTER	SET UP	Set tool above center. Reduce the overhang ratio. Clamping length should be at least 3x the boring bar diameter. Change the speed of the machine. Speed change may break up harmonics and reduce chatter.
	BORING BAR	Select the largest diameter boring bar that will bore the required diameter.
TAPER SMALLER IN BACK	CHIP PACKING	If the boring bar is too large to allow chips to evacuate, then the chips may pack on the tool and cause the bar to deflect away from the bore.
	PROGRAM	If the taper is consistent, then the program can be altered to bore a taper in opposite direction resulting in a straight hole.
TAPER BIGGER IN BACK	CUTTING FORCES	Reduce forces. Deflecting bar below center causes hole to become larger.
	BUILT-UP EDGE	Built-up edge will cause the hole to become larger until the built edge breaks off, then the hole becomes smaller.
	PROGRAM	If taper is consistent, then the program can be altered to bore a taper in the opposite direction resulting in a straight hole.

# GROOVING TOOL FEED AND SPEED CHART

MATERIAL	HB/Rc	SPEED (SFM)		CUTTING CONDITIONS				
				TOOL DIAMETER				
		UNCOATED	ALTiN+	.060 -0.080	.090 -.120	.187	.250-.312	.375+
				MAX FPR	MAX FPR	MAX FPR	MAX FPR	MAX FPR
CAST IRON	160 HB	75-200	200-550	0.0010	0.0012	0.0017	0.0031	0.0044
CARBON STEEL	18 Rc	75-200	200-450	0.0007	0.0008	0.0011	0.0022	0.0030
ALLOY STEEL	20 Rc	75-200	200-425	0.0006	0.0007	0.0010	0.0019	0.0026
TOOL STEEL	25 Rc	75-175	175-300	0.0005	0.0006	0.0008	0.0015	0.0022
300 STAINLESS STEEL	150 HB	75-175	75-350	0.0006	0.0007	0.0010	0.0019	0.0026
400 STAINLESS STEEL	195 HB	75-210	130-420	0.0005	0.0006	0.0008	0.0016	0.0023
HIGH TEMP ALLOY (NICKEL & COBALT BASE)	20 Rc	50-130	130-300	0.0004	0.0005	0.0007	0.0013	0.0017
TITANIUM	25 Rc	50-120	120-275	0.0005	0.0006	0.0008	0.0016	0.0022
HEAT TREATED ALLOYS (38-45Rc)	40 Rc	50-100	100-200	0.0004	0.0004	0.0006	0.0011	0.0016
ALUMINUM	100 HB	75-250	250-750	0.0022	0.0026	0.0037	0.0065	0.0085
BRASS, ZINC	80 HB	250-300	250-650	0.0018	0.0021	0.0030	0.0053	0.0079

SFM = Surface Feet Per Minute

FPR = Feed Per Revolution

Starting parameters only. Length-to-diameter ratios, setup, and machine rigidity may affect performance.

## GROOVING TOOL TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
RAPID FLANK WEAR	CUTTING CONDITIONS	Check for excessive speed - see chart.
	TOOL	Select a coated tool.
	PART	Make sure prior operation did not work harden the material.
BUILT-UP EDGE	TOOL	Select a coated tool.
	CUTTING FORCE	Check for excessive speed rate (IPR) - see chart.
	HEAT	Use the SCT coolant holder. If coolant is not available, use shop air and a coated tool.
CHATTER	CUTTING CONDITIONS	Reduce RPM and increase feed rate within the feed and speed chart parameters.
	CLAMPING	Clamping length should be a minimum of 3x the shank diameter in the tool holder. Check tool holding rigidity.
	TOOL	Hone cutting edge. A light hone (0.0001-0.0003 inch) will help keep force constant.
TOOL BREAKAGE	CUTTING CONDITIONS	Check for excessive feed rate (IPR) - see chart.
	CHIP PACKING	Stagger - Peck grooving.

# SINGLE POINT THREADING TECHNICAL CHART

MATERIAL	HB/Rc	SPEED (SFM)		FIRST PASS DEPTH					
		UNCOATED	ALTiN+	TOOL DIAMETER					
				.040-.050	.060-.092	.120-.152	.180-.232	.290-.362	.373+
CAST IRON	160 HB	75-200	200-550	0.003	0.004	0.005	0.007	0.008	0.009
CARBON STEEL	18 Rc	75-200	200-450	0.003	0.005	0.006	0.007	0.008	0.009
ALLOY STEEL	20 Rc	75-200	200-425	0.003	0.004	0.005	0.006	0.007	0.008
TOOL STEEL	25 Rc	75-175	175-300	0.002	0.003	0.004	0.005	0.006	0.007
300 STAINLESS STEEL	150 HB	75-175	175-350	0.003	0.003	0.004	0.005	0.006	0.007
400 STAINLESS STEEL	195 HB	75-210	130-420	0.003	0.004	0.005	0.006	0.006	0.007
HIGH TEMP ALLOY (NICKEL & COBALT BASE)	20 Rc	50-130	130-300	0.002	0.003	0.003	0.004	0.005	0.005
TITANIUM	25 Rc	50-100	120-275	0.003	0.003	0.004	0.005	0.006	0.007
HEAT TREATED ALLOYS (38-45Rc)	40 Rc	50-100	100-200	0.002	0.002	0.003	0.004	0.004	0.005
ALUMINUM	100 HB	75-250	200-750	0.004	0.005	0.007	0.008	0.010	0.011
BRASS, ZINC	80 HB	75-300	250-650	0.003	0.005	0.006	0.007	0.008	0.009

Parameters are a starting point based on machinability rating at hardness listed.  
Check machinability rating of the material to be machined and adjust First Pass Depth.

## Helpful Formulas and Information

$$\text{PITCH} = \frac{1}{\text{TPI}}$$

TPI = Threads Per Inch

ACME Thread Depth = Pitch × 0.5

Stub ACME Thread Depth = Pitch × 0.3

NPT Pipe Thread Depth = Pitch × 0.76

Internal 60° Thread Depth = Pitch × 0.54

Feed Rate = Pitch × Number of Thread Starts

Minimum Depth per Pass should not be less than 0.0003

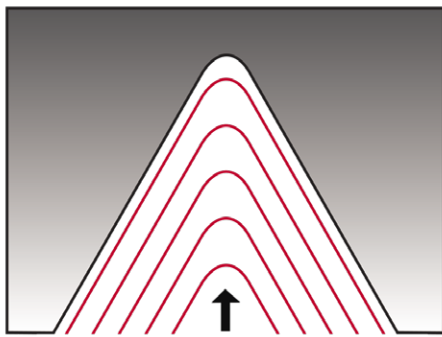
Threads not ending in a relief need at least one thread pitch length of pullout

Make sure feed rate calculation does not exceed the maximum feed rate of the machine

# SINGLE POINT THREADING TROUBLESHOOTING

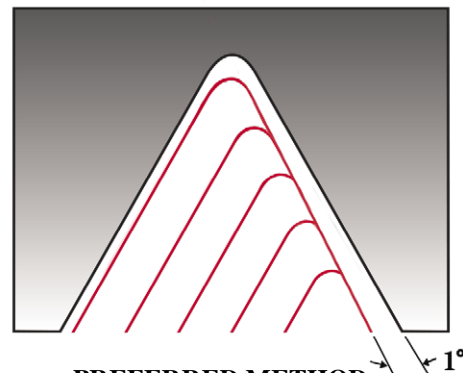
PROBLEM	CAUSE	SOLUTION
RAPID FLANK WEAR	CUTTING CONDITIONS	Check for excessive speed - see chart.
	PART	Make sure prior operation did not work harden the material.
	TOOL	Select a coated tool.
BUILT-UP EDGE	TOOL	Select a coated tool.
	CUTTING FORCE	Increase the number of passes.
	HEAT	Use the SCT coolant holder. If coolant is not available, use shop air and a coated tool.
CORNER BREAKAGE	CUTTING CONDITIONS	Reduce the depth-of-cut on the first pass.
	PROGRAM	If there is no thread relief, withdraw the tool on an angle.
	PART	End in thread relief.
CHIPS WRAPPING AROUND TOOL	TOOL	Use a tool that is at least 30% smaller than the hole diameter.

## RADIAL INFEEED



NOT RECOMMENDED

## MODIFIED FLANK



PREFERRED METHOD

Radial Infeed is not recommended. Modified flank at 1° is recommended.

For unfavorable length-to-diameter ratios or difficult-to-machine materials, the number of passes will need to be increased up to 40% more.

Depth of cut per pass should not be less than 0.0003 inch.

# SINGLE POINT CBN & PCD TECHNICAL & APPLICATION

## PCD TIPPED TOOL INFORMATION

SCT PCD tools and inserts are excellent for continuous cutting of a wide range of non-ferrous and non-metal materials. The products are precision ground for machining to sub-micron finishes with maximum tool life. PCD allows for higher cutting speeds with longer tool life.

SINGLE POINT TOOLS  
TECH INFO

MATERIAL	BHN/Rc	SPEED RANGE (SFM)	FEED IPR	SINGLE POINT PCD TIPPED BARS			
				TOOL DIAMETER			
				.120-160 MAX DOC	.180-.230 MAX DOC	.290-.320 MAX DOC	.360+ MAX DOC
LOW SILICON ALUMINUM	225-350 BHN	1000-5000	.001-.007	0.015	0.021	0.03	0.045
HIGH SILICON ALUMINUM	270-425 BHN	600-3000	.001-.007	0.015	0.021	0.03	0.045
METAL MATRIX COMPOSITIES	N/A	500-2000	.001-.007	0.008	0.012	0.02	0.03
COPPER ALLOYS, BRASS, BRONZE	80-120 BHN	750-3500	.001-.007	0.015	0.021	0.03	0.045
PRESINTERED TUNGSTEN CARBIDE	140-300 BHN	100-350	.001-.005	0.003	0.005	0.007	0.012
ACRYLICS	N/A	700-1500	.001-.007	0.015	0.021	0.03	0.045
FIBERGLASS	N/A	600-1000	.001-.007	0.012	0.02	0.03	0.045
GRAPHITES	N/A	600-1000	.001-.007	0.015	0.021	0.03	0.045
NYLON, PLASTIC	N/A	700-1500	.001-.007	0.015	0.021	0.03	0.045
HARD RUBBER	N/A	500-2500	.001-.007	0.015	0.021	0.03	0.045

APPLICATION GUIDELINES
Make sure the machine and setup is rigid and solid. Chatter will cause chipping.
Tool height when boring should be slightly above center. Tool deflection will put the tool on center.
Do not stop the machine with the tool in cut. This will result in tool breakage.
Use of coolant will reduce heat and improve surface finish.
Do not contact the tool to a hard surface prior to the machining process- this will cause chipping.
Higher speeds minimize tool buildup.
Depth of cut should not exceed 70% of PCD tip length.

As the DOC decreases the feed rate can increase DOC = Depth of Cut SFM = Surface Feet per Minute

## CBN TIPPED TOOL INFORMATION

SCT CBN tools and inserts are excellent for continuous cutting of a wide range of hardened steels, powdered metals, cast irons and super alloys. The products are precision ground with hones for machining to sub-micron finishes with maximum tool life. CBN tipped tools and inserts can take the place of grinding.

MATERIAL	BHN/Rc	SPEED RANGE (SFM)	FEED IPR	SINGLE POINT CBN TIPPED BARS			
				TOOL DIAMETER			
				.120-160 MAX DOC	.180-.230 MAX DOC	.290-.320 MAX DOC	.360+ MAX DOC
HEAT TREATED ALLOY	45-60Rc	200-600	.001-.005	0.003	0.004	0.006	0.009
TOOL STEEL	45-60Rc	200-600	.001-.005	0.003	0.004	0.006	0.009
NODULAR IRON	N/A	600-1500	.001-.005	0.006	0.01	0.02	0.03
PEARLITIC IRON	220-240BHN	600-2500	.001-.007	0.006	0.01	0.02	0.03
WHITE/CHILLED IRON	54-60Rc	200-500	.001-.005	0.005	0.008	0.012	0.015
SUPER ALLOY Ni BASE	240-475 BHN	200-800	.001-.005	0.003	0.004	0.006	0.025
COBOLT BASED ALLOY, STELLITE	45-55Rc	200-500	.001-.005	0.003	0.004	0.006	0.009
INCONELS	45-55Rc	200-500	.001-.005	0.003	0.004	0.006	0.009

APPLICATION GUIDELINES
Make sure the machine and setup is rigid and solid. Chatter will cause chipping
Tool height when boring should be slightly above center. Tool deflection will put the tool on center.
Do not stop the machine with the tool in cut. This will result in tool breakage.
Coolant use is not advised as it could cause thermal cracking.
Do not contact the tool to a hard surface prior to the machining process. This will cause chipping.
Depth of cut should not exceed 30% of CBN tip length.

As the DOC decreases the feed rate can increase DOC = Depth of Cut SFM = Surface Feet per Minute