

OUTILLAGES/TOOLS
AVITEC INC.





Since 1979, **Avitec Tools Inc.** has been manufacturing precision cutting tools made of cobalt, powder metal, carbide and high speed steel as well as specialized tooling.

Over the years, we have built an excellent reputation with the aerospace, automotive and military industries. Today we are recognized for our pioneering spirit, commitment to quality and the continuous improvement of our manufacturing processes.

We provide a complete service from initial design and development and manufacturing stages to reconditioning and repair. Using state of the art equipment and CAD/CAM software, our R&D engineers consistently demonstrate their know-how by offering customers original, practical and effective solutions.



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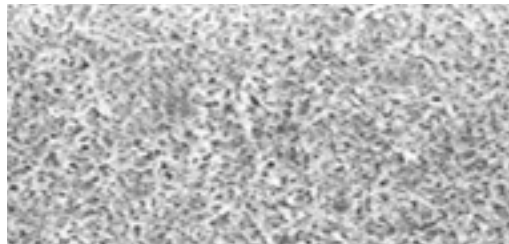


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We use the world's finest quality carbide to manufacture all our solid carbide tooling.

Avitec Premium Grade

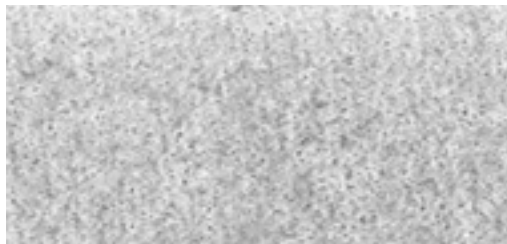
All our end mills are manufactured using **Avitec Premium** sub micro grain, which is best, suited for most of your metal removal requirements.



Traverse Rupture Strength: >550 000 psi

Avitec Plus Grade

Avitec Plus is an ultra fine grain specially chosen grade of carbide to provide maximum performance in difficult to machine applications.



Traverse Rupture Strength: >690 000 psi

Our application engineers will recommend a coating that will increase the tool life according to your application.

1) AVW01

A good general purpose coating used for protecting a wide variety of tools from wear. A good choice for the machining of iron-based materials.

2) AVW02

High hardness goodwear resistance and enhanced toughness. For machining difficult to machine steel alloys and high speed cutting where moderate temperatures are generated at the cutting edge.

3) AVW03

A nanolayer coating designed for a wide range of carbide, cermet, and high-speed steel tooling. Excellent for machining cast iron, stainless steel, nickel-based high temperature alloys and titanium alloys, and hardened steel work pieces <55Rc. Excellent oxidation resistance allows high speed and semi-dry or dry machining operations.

3) AVW04

A single layer coating designed specifically for use on carbide end mills for the machining of hardened steel work pieces >55Rc. Excellent oxidation resistance allows high speed and semi-dry or dry machining operations.

4) AVW05

A specialized coating that resists adhesive wear, corrosion, and oxidation. It is recommended for the machining of copper-based materials. It is considerably harder than conventional chrome plating.

5) AVW06

Comprised of hard tungsten carbide particles in a softer amorphous carbon matrix. This results in a coating with low coefficient of friction. Cutting Tools experiencing severe adhesive wear will also benefit from this low friction coating.

6) AVW07

For cutting hard steels (>50 HRC) and aerospace materials incl. Titanium, Inconel; only for carbide tools.

7) AVWXX

Coating of choice for machining with high demand of friction and temperature control. Coating greatly aids in chip evacuation.

8) AVWPCD1 Diamond Coating

Recommended for cutting aluminum and other non-ferrous metals that chip weld.

9) AVWPCD2 Diamond Coating

Unmatched tool life for cutting hard abrasive materials like composites.

10) Special Coating

We have the knowledge to formulate coatings for specific applications where our standard coatings offered do not apply.

Specifications

- All tools are stocked ROUND shank
- End Mills are stocked with nil radii.
- Coolant thru available upon request.
- Ball nose end mills are manufactured from solid.
- Metric sizes for any item in this catalog are available upon request.
- Corner RADII, BALL nose and left hand are available upon request.

Our tools are designed and manufactured to surpass all industry standards for cutting tools, including N.A.S. and A.S.M.E. standards.

Ordering

To order, provide us with the tool identification number, see example below,

Ex: **AV010120-.063 rad**

Reconditioning and Repair

We offer a full reconditioning service, allowing our customers to maintain performance of their tools without compromising production requirements.

We also repair inserted cutter bodies, reproducing exact pocket geometries for any tool on the market today.

Rapid Modification Service

We provide a rapid modification service adding radii, chamfers and form shapes on end mills, Weldon flats and whistle notches on shanks, steps and pilots on drills and reamers.

Caution: Cutting tools can break or shatter, the use of safety glasses is mandatory. Wear gloves when handling cutting tools to prevent injury.

Solid Carbide End Mills

GENERAL APPLICATIONS



2 FLUTES 3 FLUTES 4 FLUTES 5 FLUTES 7 FLUTES

2 FLUTES- Slotting of non-ferrous, composites and plastics.

3 FLUTES- Provides more stability for difficult operations.

4 FLUTES- Profiling and finishing operations.

5 and 7 FLUTES- Profiling and finishing operations in difficult to machine materials.

STANDARD LENGTH

Cutting Dia.	Flute Length	Shank Dia.	O.A.L.	2 Flute	3 Flute	4 Flute	5 Flute	7 Flute
1/32 (.031)	3/32	1/8	1-1/2	AV010005	AV010185	AV010365	-	-
3/64 (.046)	9/64	1/8	1-1/2	AV010010	AV010190	AV010370	-	-
1/16 (.063)	3/16	1/8	1-1/2	AV010015	AV010195	AV010375	-	-
5/64 (.078)	3/16	1/8	1-1/2	AV010020	AV010200	AV010380	-	-
3/32 (.093)	3/8	1/8	1-1/2	AV010025	AV010205	AV010385	-	-
7/64 (.109)	3/8	1/8	1-1/2	AV010030	AV010210	AV010390	-	-
1/8 (.125)	1/2	1/8	1-1/2	AV010035	AV010215	AV010395	-	-
9/64 (.140)	9/16	3/16	2	AV010040	AV010220	AV010400	-	-
5/32 (.156)	9/16	3/16	2	AV010045	AV010225	AV010405	-	-
11/64 (.171)	5/8	3/16	2	AV010050	AV010230	AV010410	-	-
3/16 (.187)	5/8	3/16	2	AV010055	AV010235	AV010415	-	-
13/64 (.203)	5/8	1/4	2-1/2	AV010060	AV010240	AV010420	-	-
7/32 (.219)	5/8	1/4	2-1/2	AV010065	AV010245	AV010425	-	-
15/64 (.234)	3/4	1/4	2-1/2	AV010070	AV010250	AV010430	-	-
1/4 (.250)	3/4	1/4	2-1/2	AV010075	AV010255	AV010435	AV010545	-
17/64 (.265)	3/4	5/16	2-1/2	AV010080	AV010260	AV010440	AV010550	-
9/32 (.281)	3/4	5/16	2-1/2	AV010085	AV010265	AV010445	AV010555	-
19/64 (.296)	13/16	5/16	2-1/2	AV010090	AV010270	AV010450	AV010560	-
5/16 (.312)	13/16	5/16	2-1/2	AV010095	AV010275	AV010455	AV010565	-
21/64 (.328)	7/8	3/8	2-1/2	AV010100	AV010280	AV010460	AV010570	-
11/32 (.343)	7/8	3/8	2-1/2	AV010105	AV010285	AV010465	AV010575	-
23/64 (.359)	7/8	3/8	2-1/2	AV010110	AV010290	AV010470	AV010580	-
3/8 (.375)	7/8	3/8	2-1/2	AV010115	AV010295	AV010475	AV010585	AV010655
25/64 (.390)	7/8	7/16	2-1/2	AV010120	AV010300	AV010480	AV010590	AV010660
13/32 (.406)	7/8	7/16	2-1/2	AV010125	AV010305	AV010485	AV010595	AV010665
27/64 (.421)	7/8	7/16	2-1/2	AV010130	AV010310	AV010490	AV010600	AV010670
7/16 (.437)	7/8	7/16	2-1/2	AV010135	AV010315	AV010495	AV010605	AV010675
29/64 (.453)	1	1/2	3	AV010140	AV010320	AV010500	AV010610	AV010680
15/32 (.468)	1	1/2	3	AV010145	AV010325	AV010505	AV010615	AV010685
31/64 (.484)	1	1/2	3	AV010150	AV010330	AV010510	AV010620	AV010690
1/2 (.500)	1	1/2	3	AV010155	AV010335	AV010515	AV010625	AV010695
9/16 (.562)	1-1/4	9/16	3	AV010160	AV010340	AV010520	AV010630	AV010700
5/8 (.625)	1-1/4	5/8	3-1/2	AV010165	AV010345	AV010525	AV010635	AV010705
3/4 (.750)	1-1/2	3/4	4	AV010170	AV010350	AV010530	AV010640	AV010710
7/8 (.875)	1-1/2	7/8	4	AV010175	AV010355	AV010535	AV010645	AV010715
1.000	1-1/2	1	4	AV010180	AV010360	AV010540	AV010650	AV010720

Corner Radii, Ball nose and Left hand are available upon request.



2 FLUTES



4 FLUTES



3 FLUTES

3/8 diameter shank End mills provide increased stability and minimizes the number of tool holders in your shop.

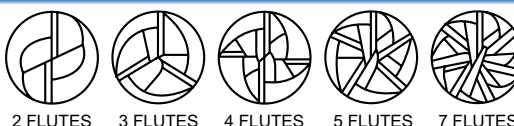
3/8 DIA SHANK ENDMILLS

Cutting Dia.	Flute Length	Shank Dia.	O.A.L.	2 Flute	3 Flute	4 Flute
1/8 (.125)	1/2	3/8	2-1/2	AV010725	AV010790	AV010855
9/64 (.140)	9/16	3/8	2-1/2	AV010730	AV010795	AV010860
5/32 (.156)	9/16	3/8	2-1/2	AV010735	AV010800	AV010865
11/64 (.171)	5/8	3/8	2-1/2	AV010740	AV010805	AV010870
3/16 (.187)	5/8	3/8	2-1/2	AV010745	AV010810	AV010875
13/64 (.203)	5/8	3/8	2-1/2	AV010750	AV010815	AV010880
7/32 (.219)	5/8	3/8	2-1/2	AV010755	AV010820	AV010885
15/64 (.234)	5/8	3/8	2-1/2	AV010760	AV010825	AV010890
1/4 (.250)	3/4	3/8	2-1/2	AV010765	AV010830	AV010895
17/64 (.265)	3/4	3/8	2-1/2	AV010770	AV010835	AV010900
9/32 (.281)	3/4	3/8	2-1/2	AV010775	AV010840	AV010905
19/64 (.296)	3/4	3/8	2-1/2	AV010780	AV010845	AV010910
5/16 (.312)	13/16	3/8	2-1/2	AV010785	AV010850	AV010915

Corner Radii, Ball nose and Left hand are available upon request.

Solid Carbide End Mills

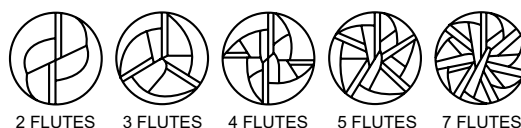
GENERAL APPLICATIONS



Short standouts are critical when trying to increase productivity by increasing feeds.

STUB LENGTH

Cutting Dia.	Flute Length	Shank Dia.	O.A.L.	2 Flute	3 Flute	4 Flute	5 Flute	7 Flute
1/32 (.031)	1/16	1/8	1-1/2	AV010920	AV011000	AV011080	-	-
3/64 (.046)	3/32	1/8	1-1/2	AV010925	AV011005	AV011085	-	-
1/16 (.063)	1/8	1/8	1-1/2	AV010930	AV011010	AV011090	-	-
3/32 (.093)	3/16	1/8	1-1/2	AV010935	AV011015	AV011095	-	-
1/8 (.125)	1/4	1/8	1-1/2	AV010940	AV011020	AV011100	-	-
5/32 (.156)	5/16	3/16	1-1/2	AV010945	AV011025	AV011105	-	-
3/16 (.187)	5/16	3/16	1-1/2	AV010950	AV011030	AV011110	-	-
7/32 (.219)	1/2	1/4	2	AV010955	AV011035	AV011115	-	-
1/4 (.250)	1/2	1/4	2	AV010960	AV011040	AV011120	AV011160	-
5/16 (.312)	1/2	5/16	2	AV010965	AV011045	AV011125	AV011165	-
3/8 (.375)	5/8	3/8	2	AV010970	AV011050	AV011130	AV011170	AV011200
7/16 (.437)	5/8	7/16	2-1/2	AV010975	AV011055	AV011135	AV011175	AV011205
1/2 (.500)	5/8	1/2	2-1/2	AV010980	AV011060	AV011140	AV011180	AV011210
5/8 (.625)	3/4	5/8	3	AV010985	AV011065	AV011145	AV011185	AV011215
3/4 (.750)	1	3/4	3	AV010990	AV011070	AV011150	AV011190	AV011220
1.000	1	1	4	AV010995	AV011075	AV011155	AV011195	AV011225



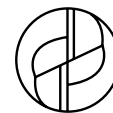
These End Mills are ideal for work pieces requiring long reach and containing deep features.

LONG and EXTRA LONG

Cutting Dia.	Flute Length	Shank Dia.	O.A.L.	2 Flute	3 Flute	4 Flute	5 Flute	7 Flute
1/8 (.125)	3/4	1/8	2-1/4	AV011230	AV011320	AV011410	-	-
1/8 (.125)	1	1/8	3	AV011235	AV011325	AV011415	-	-
3/16 (.187)	3/4	3/16	2-1/2	AV011240	AV011330	AV011420	-	-
3/16 (.187)	1	3/16	3	AV011245	AV011335	AV011425	-	-
1/4 (.250)	1	1/4	3	AV011250	AV011340	AV011430	AV011500	-
1/4 (.250)	1-1/2	1/4	4	AV011255	AV011345	AV011435	AV011505	-
5/16 (.312)	1-1/8	5/16	3	AV011260	AV011350	AV011440	AV011510	-
5/16 (.312)	1-5/8	5/16	4	AV011265	AV011355	AV011445	AV011515	-
3/8 (.375)	1-1/4	3/8	3	AV011270	AV011360	AV011450	AV011520	AV011570
3/8 (.375)	1-3/4	3/8	4	AV011275	AV011365	AV011455	AV011525	AV011575
1/2 (.500)	2	1/2	4	AV011280	AV011370	AV011460	AV011530	AV011580
1/2 (.500)	3	1/2	6	AV011285	AV011375	AV011465	AV011535	AV011585
5/8 (.625)	2-1/4	5/8	5	AV011290	AV011380	AV011470	AV011540	AV011590
5/8 (.625)	3	5/8	6	AV011295	AV011385	AV011475	AV011545	AV011595
3/4 (.750)	2-1/4	3/4	5	AV011300	AV011390	AV011480	AV011550	AV011600
3/4 (.750)	3	3/4	6	AV011305	AV011395	AV011485	AV011555	AV011605
1.000	2-1/4	1	5	AV011310	AV011400	AV011490	AV011560	AV011610
1.000	3	1	6	AV011315	AV011405	AV011495	AV011565	AV011615

Corner Radii, Ball nose and Left hand are available upon request.

Avicarb end mills have a free cutting geometry for high metal removal rates when roughing and finishing aluminum. Designed to operate at today's higher RPM machine tools, Avicarb end mills provide extended tool life and superior surface finishes on components.



2 FLUTES



3 FLUTES

STANDARD LENGTH

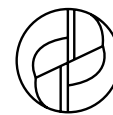
Cutting Dia.	Flute Length	Shank Dia.	O.A.L.	2 Flute	3 Flute
1/8 (.125)	3/8	1/8	1-1/2	AV011620	AV011685
5/32 (.156)	1/2	3/16	2	AV011625	AV011690
3/16 (.187)	9/16	3/16	2	AV011630	AV011695
1/4 (.250)	3/4	1/4	2-1/2	AV011635	AV011700
5/16 (.312)	3/4	5/16	2-1/2	AV011640	AV011705
3/8 (.375)	1	3/8	2-1/2	AV011645	AV011710
7/16 (.437)	1	7/16	2-1/2	AV011650	AV011715
1/2 (.500)	1-1/4	1/2	3	AV011655	AV011720
5/8 (.625)	1-5/8	5/8	3-1/2	AV011660	AV011725
3/4 (.750)	1-5/8	3/4	4	AV011665	AV011730
7/8 (.875)	2	7/8	5	AV011670	AV011735
1.000	2	1	5	AV011675	AV011740
1-1/4 (1.250)	2	1-1/4	5	AV011680	AV011745

Corner Radii, Ball nose and Left hand are available upon request.

Obtain greater rigidity using shorter flutes.

STUB LENGTH

Cutting Dia.	Flute Length	Shank Dia.	O.A.L.	2 Flute	3 Flute
1/8 (.125)	1/4	1/8	1-1/2	AV011750	AV011805
3/16 (.187)	5/16	3/16	1-1/2	AV011755	AV011810
1/4 (.250)	1/2	1/4	2	AV011760	AV011815
5/16 (.312)	1/2	5/16	2	AV011765	AV011820
3/8 (.375)	5/8	3/8	2	AV011770	AV011825
7/16 (.437)	5/8	7/16	2-1/2	AV011775	AV011830
1/2 (.500)	5/8	1/2	2-1/2	AV011780	AV011835
5/8 (.625)	3/4	5/8	3	AV011785	AV011840
3/4 (.750)	1	3/4	3	AV011790	AV011845
1.000	1	1	4	AV011795	AV011850
1-1/4	1-1/4	1	4	AV011800	AV011855



2 FLUTES

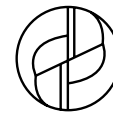


3 FLUTES

Maintain high metal removal rates even in difficult to reach applications.

LONG and EXTRA LONG

Cutting Dia.	Flute Length	Shank Dia.	O.A.L.	2 Flute	3 Flute
1/8 (.125)	3/4	1/8	2-1/4	AV011860	AV011950
1/8 (.125)	1	1/8	3	AV011865	AV011955
3/16 (.187)	3/4	3/16	2-1/2	AV011870	AV011960
3/16 (.187)	1	3/16	3	AV011875	AV011965
1/4 (.250)	1	1/4	3	AV011880	AV011970
1/4 (.250)	1-1/2	1/4	4	AV011885	AV011975
5/16 (.312)	1-1/8	5/16	3	AV011890	AV011980
5/16 (.312)	1-5/8	5/16	4	AV011895	AV011985
3/8 (.375)	1-1/4	3/8	3	AV011900	AV011990
3/8 (.375)	1-3/4	3/8	4	AV011905	AV011995
1/2 (.500)	2	1/2	4	AV011910	AV012000
1/2 (.500)	3	1/2	6	AV011915	AV012005
5/8 (.625)	2-1/4	5/8	5	AV011920	AV012010
5/8 (.625)	3	5/8	6	AV011925	AV012015
3/4 (.750)	2-1/4	3/4	5	AV011930	AV012020
3/4 (.750)	3	3/4	6	AV011935	AV012025
1.000	2-1/4	1	5	AV011940	AV012030
1.000	3	1	6	AV011945	AV012035



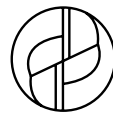
2 FLUTES



3 FLUTES

Corner Radii, Ball nose and Left hand are available upon request.

Machining aluminum with maximum rigidity at long standouts while maintaining high metal removal rates. Our flute runout geometry allows you to rough and finish a wall using the step down method without compromising the surface quality of the component.



2 FLUTES



3 FLUTES



STUBBY FLUTE - LONG and EXTRA LONG REACH

Cutting Dia.	Flute Length	Standout Length	Neck Dia.	Shank Dia.	O.A.L.	2 Flute	3 Flute
1/4 (.250)	3/8	1-1/2	.220	1/4	3	AV012040	AV012180
1/4 (.250)	3/8	2	.220	1/4	3-1/2	AV012045	AV012185
5/16 (.312)	7/16	1-1/2	.280	5/16	3	AV012050	AV012190
5/16 (.312)	7/16	2-1/4	.280	5/16	3-3/4	AV012055	AV012195
3/8 (.375)	1/2	1-1/2	.345	3/8	3-1/2	AV012060	AV012200
3/8 (.375)	1/2	2	.345	3/8	4	AV012065	AV012205
3/8 (.375)	1/2	3	.345	3/8	5	AV012070	AV012210
7/16 (.437)	9/16	1-1/2	.410	7/16	3-1/2	AV012075	AV012215
7/16 (.437)	9/16	2	.410	7/16	4	AV012080	AV012220
7/16 (.437)	9/16	3	.410	7/16	6	AV012085	AV012225
1/2 (.500)	5/8	1-1/2	.470	1/2	3-1/2	AV012090	AV012230
1/2 (.500)	5/8	2	.470	1/2	4	AV012095	AV012235
1/2 (.500)	5/8	3-1/2	.470	1/2	6	AV012100	AV012240
1/2 (.500)	5/8	4	.470	1/2	6	AV012105	AV012245
5/8 (.625)	3/4	1-1/2	.590	5/8	3-1/2	AV012110	AV012250
5/8 (.625)	3/4	2	.590	5/8	4	AV012115	AV012255
5/8 (.625)	3/4	3-1/2	.590	5/8	6	AV012120	AV012260
5/8 (.625)	3/4	4	.590	5/8	6	AV012125	AV012265
3/4 (.750)	1	2	.710	3/4	4	AV012130	AV012270
3/4 (.750)	1	3-1/2	.710	3/4	5-1/2	AV012135	AV012275
3/4 (.750)	1	4	.710	3/4	6	AV012140	AV012280
3/4 (.750)	1	4-1/2	.710	3/4	6-1/2	AV012145	AV012285
1.000	1-1/4	2	.950	1	4	AV012150	AV012290
1.000	1-1/4	3-1/2	.950	1	6	AV012155	AV012295
1.000	1-1/4	4	.950	1	6-1/2	AV012160	AV012300
1.000	1-1/4	4-1/2	.950	1	7	AV012165	AV012305
1.250	1-1/4	2	1.200	1	4-1/4	AV012170	AV012310
1.250	1-1/4	3	1.200	1	5-1/4	AV012175	AV012315

Corner Radii, Ball nose and Left hand are available upon request.

Solid Carbide End Mills

Roughing



Hog out aluminum at great metal removal rates using less horsepower.



Rougher Geometry



3-FLUTE ROUGHING SERIES

Cutting Dia.	Flute Length	Shank Dia.	O.A.L.	Tool Number
1/4 (.250)	3/4	1/4	2-1/2	AV012320
5/16 (.312)	3/4	5/16	2-1/2	AV012325
3/8 (.375)	7/8	3/8	2-1/2	AV012330
1/2 (.500)	1	1/2	3	AV012335
5/8 (.625)	1-1/4	5/8	3-1/2	AV012340
5/8 (.625)	1-3/4	5/8	4	AV012345
3/4 (.750)	1-1/2	3/4	4	AV012350
3/4 (.750)	2	3/4	4-1/2	AV012355
7/8 (.875)	1-1/2	7/8	4	AV012360
1.000	1-1/2	1	4	AV012365
1.000	2	1	4-1/2	AV012370

Roughing steels and exotic materials these endmills enable higher feeds when hogging out material prior to finishing operations.



MULTI-FLUTE ROUGHING

Cutting Dia.	Flute Length	Shank Dia.	O.A.L.	No. Flutes	Tool Number
1/4 (.250)	3/4	1/4	2-1/2	3	AV012950
5/16 (.312)	3/4	5/16	2-1/2	3	AV012955
3/8 (.375)	7/8	3/8	2-1/2	4	AV012960
1/2 (.500)	1	1/2	3	4	AV012965
5/8 (.625)	1-1/4	5/8	3-1/2	4	AV012970
5/8 (.625)	1-3/4	5/8	4	4	AV012975
3/4 (.750)	1-1/2	3/4	4	4	AV012980
3/4 (.750)	2	3/4	4-1/2	4	AV012985
7/8 (.875)	1-1/2	7/8	4	5	AV012990
1.000	1-1/2	1	4	5	AV012995
1.000	2	1	4-1/2	5	AV013000

Corner Radii, Ball nose and Left hand are available upon request.



3 FLUTES



5 FLUTES



7 FLUTES

Profiling and finishing operations in difficult to machine materials.

MULTI-FLUTE HIGH HELIX - STANDARD LENGTH

Cutting Dia.	Flute Length	Shank Dia.	O.A.L.	3 Flute	5 Flute	7 Flute
1/4 (.250)	3/4	1/4	2-1/2	AV012430	AV012540	-
17/64 (.265)	3/4	5/16	2-1/2	AV012435	AV012545	-
9/32 (.281)	3/4	5/16	2-1/2	AV012440	AV012550	-
19/64 (.296)	13/16	5/16	2-1/2	AV012445	AV012555	-
5/16 (.312)	13/16	5/16	2-1/2	AV012450	AV012560	-
21/64 (.328)	7/8	3/8	2-1/2	AV012455	AV012565	-
11/32 (.343)	7/8	3/8	2-1/2	AV012460	AV012570	-
23/64 (.359)	7/8	3/8	2-1/2	AV012465	AV012575	-
3/8 (.375)	7/8	3/8	2-1/2	AV012470	AV012580	AV012650
25/64 (.390)	7/8	7/16	2-1/2	AV012475	AV012585	AV012655
13/32 (.406)	7/8	7/16	2-1/2	AV012480	AV012590	AV012660
27/64 (.421)	7/8	7/16	2-1/2	AV012485	AV012595	AV012665
7/16 (.437)	7/8	7/16	2-1/2	AV012490	AV012600	AV012670
29/64 (.453)	1	1/2	3	AV012495	AV012605	AV012675
15/32 (.468)	1	1/2	3	AV012500	AV012610	AV012680
31/64 (.484)	1	1/2	3	AV012505	AV012615	AV012685
1/2 (.500)	1	1/2	3	AV012510	AV012620	AV012690
9/16 (.562)	1-1/4	9/16	3	AV012515	AV012625	AV012695
5/8 (.625)	1-1/4	5/8	3-1/2	AV012520	AV012630	AV012700
3/4 (.750)	1-1/2	3/4	4	AV012525	AV012635	AV012705
7/8 (.875)	1-1/2	7/8	4	AV012530	AV012640	AV012710
1.000	1-1/2	1	4	AV012535	AV012645	AV012715

Corner Radii, Ball nose and Left hand are available upon request.

Solid Carbide End Mills

High Performance Machining of Exotic Materials



3 FLUTES



5 FLUTES



7 FLUTES

Obtain greater rigidity using shorter flutes while profiling and finishing operations in difficult to machine materials.

MULTI-FLUTE HIGH HELIX - STUB LENGTH

Cutting Dia.	Flute Length	Shank Dia.	O.A.L.	3 Flute	5 Flute	7 Flute
1/4 (.250)	1/2	1/4	2	AV012720	AV012760	-
5/16 (.312)	1/2	5/16	2	AV012725	AV012765	-
3/8 (.375)	5/8	3/8	2	AV012730	AV012770	AV012800
7/16 (.437)	5/8	7/16	2-1/2	AV012735	AV012775	AV012805
1/2 (.500)	5/8	1/2	2-1/2	AV012740	AV012780	AV012810
5/8 (.625)	3/4	5/8	3	AV012745	AV012785	AV012815
3/4 (.750)	1	3/4	3	AV012750	AV012790	AV012820
1.000	1	1	4	AV012755	AV012795	AV012825



5 FLUTES



7 FLUTES

Maintain high metal removal rates even in difficult to reach applications.

MULTI-FLUTE HIGH HELIX - LONG and EXTRA LONG

Cutting Dia.	Flute Length	Shank Dia.	O.A.L.	5 Flute	7 Flute
1/4 (.250)	1	1/4	3	AV012830	-
1/4 (.250)	1-1/2	1/4	4	AV012835	-
5/16 (.312)	1-1/8	5/16	3	AV012840	-
5/16 (.312)	1-5/8	5/16	4	AV012845	-
3/8 (.375)	1-1/4	3/8	3	AV012850	AV012900
3/8 (.375)	1-3/4	3/8	4	AV012855	AV012905
1/2 (.500)	2	1/2	4	AV012860	AV012910
1/2 (.500)	3	1/2	6	AV012865	AV012915
5/8 (.625)	2-1/4	5/8	5	AV012870	AV012920
5/8 (.625)	3	5/8	6	AV012875	AV012925
3/4 (.750)	2-1/4	3/4	5	AV012880	AV012930
3/4 (.750)	3	3/4	6	AV012885	AV012935
1.000	2-1/4	1	5	AV012890	AV012940
1.000	3	1	6	AV012895	AV012945

Corner Radii, Ball nose and Left hand are available upon request.

TAPERED - SQUARE END 3-FLUTE

Taper per Side	Dia. At Tip	Dia. of Shank	Flute Length	O.A.L. Cut	Tool No.
1°	1/8	1/4	1-1/2	3	AV013185
1°	3/16	3/8	1-3/4	3-1/2	AV013190
1°	1/4	1/2	2	4	AV013195
1.5°	1/8	1/4	1-1/2	3	AV013200
1.5°	3/16	3/8	1-3/4	3-1/2	AV013205
2°	1/8	1/4	1-1/4	3	AV013210
2°	3/16	3/8	1-3/4	3-1/2	AV013215
2°	1/4	1/2	2	4	AV013220
3°	1/8	1/4	1	3	AV013225
3°	5/32	3/8	1-3/4	3-1/2	AV013230
3°	1/4	1/2	2	4	AV013235
5°	1/8	1/4	3/4	3	AV013240
5°	1/8	3/8	1-1/2	3-1/2	AV013245
5°	1/4	1/2	1-1/4	4	AV013250
7°	1/8	1/4	1/2	3	AV013255
7°	1/8	3/8	1	3-1/2	AV013260
7°	3/16	1/2	1-1/4	4	AV013265
10°	3/32	1/4	1/2	3	AV013270
10°	1/8	3/8	3/4	3-1/2	AV013275
10°	1/8	1/2	1	4	AV013280

TAPERED - BALL NOSE 3-FLUTE

Taper per Side	Dia. At Tip	Dia. of Shank	Flute Length	O.A.L. Cut	Tool No.
1°	1/8	1/4	1-1/2	3	AV013285
1°	3/16	3/8	1-3/4	3-1/2	AV013290
1°	1/4	1/2	2	4	AV013295
1.5°	1/8	1/4	1-1/2	3	AV013300
1.5°	3/16	3/8	1-3/4	3-1/2	AV013305
2°	1/8	1/4	1-1/4	3	AV013310
2°	3/16	3/8	1-3/4	3-1/2	AV013315
2°	1/4	1/2	2	4	AV013320
3°	1/8	1/4	1	3	AV013325
3°	5/32	3/8	1-3/4	3-1/2	AV013330
3°	1/4	1/2	2	4	AV013335
5°	1/8	1/4	3/4	3	AV013340
5°	1/8	3/8	1-1/2	3-1/2	AV013345
5°	1/4	1/2	1-1/4	4	AV013350
7°	1/8	1/4	1/2	3	AV013355
7°	1/8	3/8	1	3-1/2	AV013360
7°	3/16	1/2	1-1/4	4	AV013365
10°	3/32	1/4	1/2	3	AV013370
10°	1/8	3/8	3/4	3-1/2	AV013375
10°	1/8	1/2	1	4	AV013380



Special sizes are available upon request.

Solid Carbide End Mills

Die & Mold



PROFILING - STANDARD LENGTH - BALL END

Cutting Dia.	Dia. Shank	Flute Length	O.A.L.	Total Relief	Tool No. 2-Flute	Tool No. 4-Flute
3/32	3/16	3/16	2-1/2	1-3/4	AV013390	AV013425
1/8	3/16	1/4	2-1/2	1-3/4	AV013395	AV013430
3/16	1/4	5/16	3	2-1/8	AV013400	AV013435
1/4	3/8	3/8	4	2-1/2	AV013405	AV013440
5/16	3/8	1/2	4	2-1/2	AV013410	AV013445
3/8	3/8	5/8	4	2-1/2	AV013415	AV013450
1/2	1/2	13/16	4	2-1/2	AV013420	AV013455

PROFILING - EXTENDED LENGTH - BALL END

Cutting Dia.	Dia. Shank	Flute Length	O.A.L.	Total Relief	Tool No. 2-Flute	Tool No. 4-Flute
1/4	3/8	3/8	6	2-1/2	AV013460	AV013475
3/8	3/8	5/8	6	2-1/2	AV013465	AV013480
1/2	1/2	13/16	6	2-1/2	AV013470	AV013485

STRAIGHT - STANDARD LENGTH - BALL END

Cutting Dia.	Dia. Shank	Flute Length	O.A.L.	Tool No. 2-Flute	Tool No. 4-Flute
1/8	1/8	5/8	2	AV013490	AV013520
3/16	3/16	1	4	AV013495	AV013525
1/4	1/4	1	4	AV013500	AV013530
5/16	5/16	1	4	AV013505	AV013535
3/8	3/8	1	4	AV013510	AV013540
1/2	1/2	1	4	AV013515	AV013545

STRAIGHT - EXTENDED LENGTH - BALL END

Cutting Dia.	Dia. Shank	Flute Length	O.A.L.	Tool No. 2-Flute	Tool No. 4-Flute
1/4	1/4	1-1/2	6	AV013550	AV013580
5/16	5/16	1-1/2	6	AV013555	AV013585
3/8	3/8	1-1/2	6	AV013560	AV013590
1/2	1/2	1-1/2	6	AV013565	AV013595
5/8	5/8	2	6	AV013570	AV013600
3/4	3/4	2	6	AV013575	AV013605

STRAIGHT - STANDARD LENGTH - SQUARE END

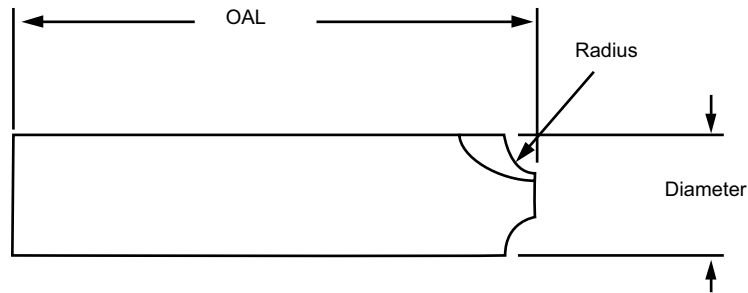
Cutting Dia.	Dia. Shank	Flute Length	O.A.L.	Tool No. 2-Flute	Tool No. 4-Flute
1/8	1/8	5/8	2	AV013610	AV013640
3/16	3/16	1	4	AV013615	AV013645
1/4	1/4	1	4	AV013620	AV013650
5/16	5/16	1	4	AV013625	AV013655
3/8	3/8	1	4	AV013630	AV013660
1/2	1/2	1	4	AV013635	AV013665

STRAIGHT - EXTENDED LENGTH - SQUARE END

Cutting Dia.	Dia. Shank	Flute Length	O.A.L.	Tool No. 2-Flute	Tool No. 4-Flute
1/4	1/4	1-1/2	6	AV013670	AV013700
5/16	5/16	1-1/2	6	AV013675	AV013705
3/8	3/8	1-1/2	6	AV013680	AV013710
1/2	1/2	1-1/2	6	AV013685	AV013715
5/8	5/8	2	6	AV013690	AV013720
3/4	3/4	2	6	AV013695	AV013725



Our specially designed Corner Rounding End Mills produce Corner Radii without undercutting your work piece.



CORNER ROUNDING

Diameter	Radius	Shank Dia.	O.A.L.	2 Flute	3 Flute	4 Flute
1/4 (.250)	.015	1/4 (.250)	2.00	AV013005	AV013065	AV013125
3/8 (.375)	.030	3/8 (.375)	2.00	AV013010	AV013070	AV013130
3/8 (.375)	.063	3/8 (.375)	2.00	AV013015	AV013075	AV013135
3/8 (.375)	.093	3/8 (.375)	2.00	AV013020	AV013080	AV013140
1/2 (.500)	.125	1/2 (.500)	2.50	AV013025	AV013085	AV013145
1/2 (.500)	.156	1/2 (.500)	2.50	AV013030	AV013090	AV013150
5/8 (.625)	.187	5/8 (.625)	3.00	AV013035	AV013095	AV013155
3/4 (.750)	.250	3/4 (.750)	3.00	AV013040	AV013100	AV013160
1.000	.312	1.000	4.00	AV013045	AV013105	AV013165
1.000	.375	1.000	4.00	AV013050	AV013110	AV013170
1.250	.437	1.250	4.00	AV013055	AV013115	AV013175
1.250	.500	1.250	4.00	AV013060	AV013120	AV013180

Corner Radii, Ball nose and Left hand are available upon request.

Feeds and Speeds Chart for end mills

Recommended Parameters for Solid Carbide End mills



The following recommended feeds and speeds are starting points. Actual parameters will vary considerably when the Optimum parameters are established for each application.

High Performance Parameters for Aluminum Machining

		ALUMINUM AND PLASTICS 400-4000 SFM				COPPER 200-600 SFM			
		2-FLUTES		3-FLUTES		2-FLUTES		3-FLUTES	
DIAMETER	CHIP LOAD	R.P.M.	I.P.M. (Feed)	R.P.M.	I.P.M. (Feed)	R.P.M.	I.P.M. (Feed)	R.P.M.	I.P.M. (Feed)
0.125	.0003/.0008	MAX	10-100	MAX	10-100	6100-MAX	8-50	6100-MAX	12-70
0.188	.0004/.0015	9000-MAX	10-100	9000-MAX	15-150	4000-12000	8-50	4000-12000	12-70
0.250	.0005/.003	6500-MAX	10-100	6500-MAX	15-150	3000-9200	10-50	3000-9200	15-75
0.375	.002/.005	4000-40000	15-200	4000-40000	20-260	2000-6100	10-50	2000-6100	15-75
0.438	.0025/.006	3500-35000	15-200	3500-35000	20-260	1800-5200	15-65	1800-5200	15-75
0.500	.003/.009	3000-30000	20-220	3000-30000	25-290	1500-4600	15-65	1500-4600	15-75
0.625	.004/.012	2400-25000	25-300	2400-25000	30-390	1200-3700	15-65	1200-3700	20-80
0.750	.006/.014	2000-20000	30-300	2000-20000	30-390	1000-3000	15-80	1000-3000	20-80
1.000	.007/.016	1500-20000	30-250	1500-20000	25-325	800-2300	15-80	800-2300	20-90
1.250	.007/.016	1200-15000	30-200	1200-15000	25-325	600-1800	15-80	600-1800	20-90

Parameters for Steel

		ALLOY STEELS 150-500 SFM		STEELS, TITANIUM ALLOYS 50-300 SFM	
DIAMETER	CHIP LOAD	R.P.M.	I.P.M. (Feed)	R.P.M.	I.P.M. (Feed)
0.125	.0003/.0006	4500-15000	3-15	1500-9000	2-10
0.188	.0004/.0008	3000-12000	3-15	1000-6000	2-10
0.250	.0005/.001	2500-8000	5-20	750-4500	2-15
0.375	.001/.004	1500-5000	8-50	600-3000	3-20
0.438	.001/.004	1300-4300	8-60	500-2600	3-25
0.500	.002/.005	1100-3800	10-65	450-2200	4-30
0.625	.0025/.006	900-3000	10-65	350-1800	6-35
0.750	.003/.006	750-2500	15-70	300-1500	6-35
1.000	.004/.007	570-1900	15-70	250-1100	7-40
1.250	.004/.008	450-1500	15-70	200-900	7-40

Formulas for Calculating Optimum Parameters

$$\text{RPM} = \frac{3.82 \times \text{SFPM}}{\text{dia}} \quad \text{SFPM} = .262 \times \text{dia} \times \text{RPM} \quad \text{IPM} = \text{RPM} \times \text{inches per tooth} \times \text{no. of teeth} \quad \text{IPT} = \frac{\text{IPM}}{\text{RPM} \times \text{no of flutes}}$$

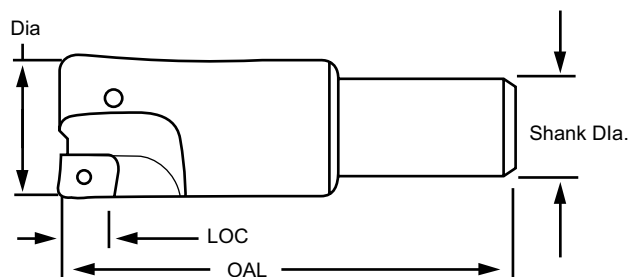
$$Q = \text{woc} \times \text{doc} \times \text{IPM} \quad \text{HP} = Q \times P$$

RPM= Revolutions per Minute
 SFPM=Surface Feet per Minute
 IPM=Inches per Minute
 IPT=Inches per Tooth (chip load)
 Dia= Cutting Diameter

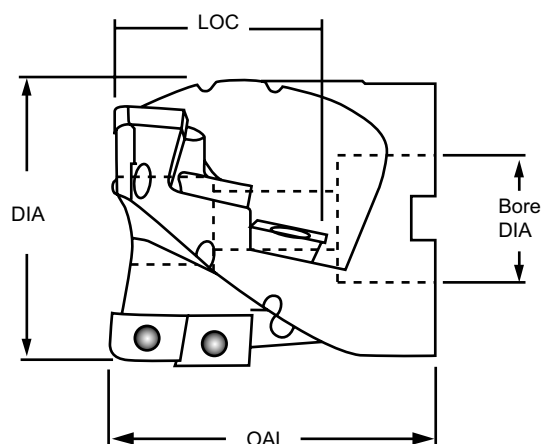
Q=Metal Removal Rate in Cubic inches per minute
 P=unit power requirements for milling
 woc=width of cut
 doc=depth of cut
 Unit Power Requirements (P):
 (aluminum=0.4),(alloy steels=1.4),(alloy steels up to 55rc=3.2)
 (stainless steels=1.9),(Titanium=1.4),

AP Series Avistell indexable cutting tools designed for machining Aluminum Alloys and Alloy Steels the various sizes are ideal for rough contouring and slotting operations.

- AP... style Non-Ramping cutters.
- Radii available from .015" to .125", see insert info, page 20
- Coolant thru is available on all cutter bodies upon request



End Mill Type



Shell Mill Type



AP...SERIES

Tool Number	Dia	L.O.C.	# Of Teeth	O.A.L.	Ramping	Insert Screw	Shank Style
AV060005	1.500	.550	3x1	6.00	Nil	AV060175	1.250 straight
AV060010	2.000	.550	3x1	6.00	Nil	AV060180	1.250 straight
AV060015	2.000	.550	3x1	6.00	Nil	AV060180	2.00 straight
AV060020	2.000	1.80	3x3	3.00	Nil	AV060180	.750 Bore
AV060025	2.000	1.80	3x3	4.810	Nil	AV060180	Cat 50 V-Flange
AV060030	2.500	1.80	3x3	3.00	Nil	AV060180	.750 Bore
AV060035	2.500	1.80	3x3	3.875	Nil	AV060180	Cat 50 V-Flange
AV060040	3.000	1.80	3x3	3.00	Nil	AV060180	1.00 bore

Special sizes are available upon request.

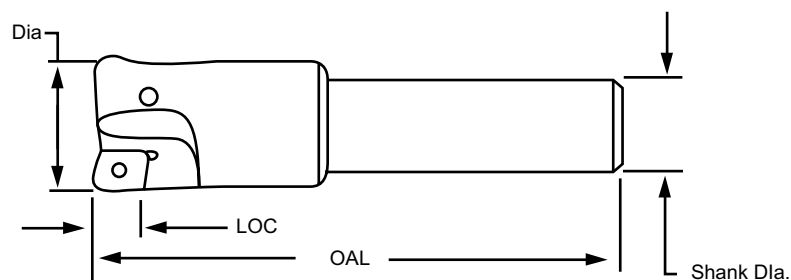
Avistell Indexable Milling Cutters

ZP...Series

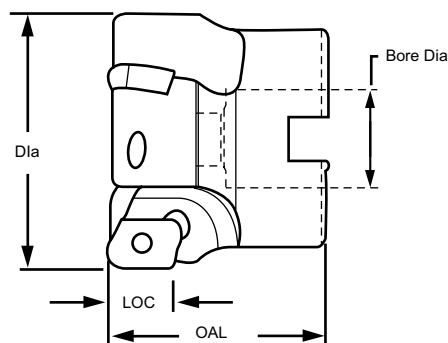


ZP Series Avistell indexable cutting tools designed for machining Aluminum Alloys, the various sizes are ideal for rough contouring, pocketing, slotting and facing operations.

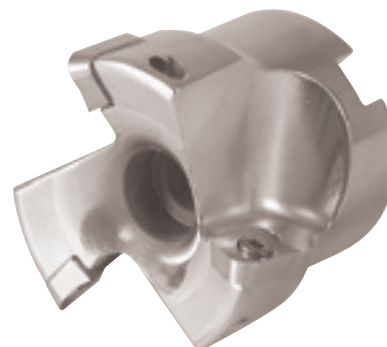
- ZP... Style **Ramping** cutters from 5 to 7 degrees.
- Radii available from .015" to .125", see insert info, page 20
- Coolant thru is available on all cutter bodies upon request.



End Mill Type



Face Mill Style



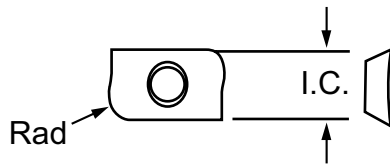
ZP...SERIES

Tool Number	Dia	L.O.C.	# Of Teeth	O.A.L.	Ramping DEG	Insert Screw	Shank Style
AV060045	1.000	.550	2x1	6.00	7	AV060175	1.000 straight
AV060050	1.250	.550	2x1	6.00	7	AV060175	1.250 straight
AV060055	1.500	.550	2x1	6.00	7	AV060175	1.250 straight
AV060060	1.500	.550	3x1	6.00	7	AV060175	1.250 straight
AV060065	1.500	.550	3x1	7.25	7	AV060175	Cat 50 V-Flange
AV060070	2.000	.550	3X1	2.00	5	AV060180	.750 bore
AV060075	2.500	.550	3x1	2.00	5	AV060180	.750 bore
AV060080	3.000	.550	3x1	2.00	5	AV060180	1.00 bore
AV060085	4.000	.550	4x1	2.00	5	AV060180	1.25 bore
AV060090	5.000	.550	4x1	2.00	5	AV060180	1.50 bore
AV060095	6.000	.550	6x1	2.00	5	AV060180	1.50 bore

Special sizes are available upon request.

AP... Style Non-Ramping Insert

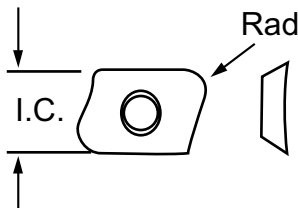
Insert for Aluminum Alloys (Non-Ferrous) grade designated by ISO standard –N- code and Alloy Steels grade designated by ISO standard –P- code



Radius	I.C.	Grade	Ramping	Insert No.
.015	.375	N10-N35	Nil	AV060100
.015	.375	P10-P35	Nil	AV060105
.030	.375	N10-N35	Nil	AV060110
.030	.375	P10-P35	Nil	AV060115
.060	.375	N10-N35	Nil	AV060120
.060	.375	P10-P35	Nil	AV060125
.093	.375	N10-N35	Nil	AV060130
.093	.375	P10-P35	Nil	AV060135
.125	.375	N10-N35	Nil	AV060140
.125	.375	P10-P35	Nil	AV060145

ZP... Style Ramping Insert

Insert for Aluminum Alloys (Non-Ferrous) grade designated by ISO standard –N- code



Radius	I.C.	Grade	Ramping	Insert No.
NIL	.375	N10-N35	7 deg	AV060150
.030	.375	N10-N35	7 deg	AV060155
.060	.375	N10-N35	7 deg	AV060160
.093	.375	N10-N35	7 deg	AV060165
.125	.375	N10-N35	7 deg	AV060170

The following recommended feeds and speeds are starting points. Actual parameters will vary considerably when the Optimum parameters are established for each application.

FEEDS AND SPEEDS

Insert Type	-P- Grade	-N- Grade	-P- Grade	-N- Grade
	Chip Load	Chip Load	Surface Feet /Min.	Surface Feet /Min.
Non-ramping Insert	.003-.008	.004-.010	100-350	1000-4000
Ramping Insert	N/A	.004-.010	N/A	1000-4000

Corner Radii, Ball nose and Left hand are available upon request.

2-Flute Solid Carbide Drills

Stub Length for Non-Ferrous Metal



With a short flute length and a 118 deg point, this tool provides high accuracy when drilling Cast iron, Aluminum, Bronze and Magnesium.



2-FLUTE CARBIDE DRILLS STUB LENGTH FOR NON-FERROUS METALS

Diameter	Decimal	Flute Length	O.A.L.	Tool No.
60	.0400	.38	1.50	AV020005
59	.0410	.38	1.50	AV020010
58	.0420	.38	1.50	AV020015
57	.0430	.38	1.50	AV020020
56	.0465	.38	1.50	AV020025
3/64	.0469	.38	1.50	AV020030
55	.0520	.38	1.50	AV020035
54	.0550	.38	1.50	AV020040
53	.0595	.38	1.50	AV020045
1/16	.0625	.38	1.50	AV020050
52	.0635	.38	1.50	AV020055
51	.0670	.38	1.50	AV020060
50	.0700	.38	1.50	AV020065
49	.0730	.38	1.50	AV020070
48	.0760	.50	1.50	AV020075
5/64	.0781	.50	1.50	AV020080
47	.0785	.50	1.50	AV020085
46	.0810	.50	1.50	AV020090
45	.0820	.50	1.50	AV020095
44	.0860	.50	2.00	AV020100
43	.0890	.50	2.00	AV020105
42	.0935	.50	2.00	AV020110
3/32	.0938	.50	2.00	AV020115
41	.0960	.50	2.00	AV020120
40	.0980	.63	2.00	AV020125
39	.0995	.63	2.00	AV020130
38	.1015	.63	2.00	AV020135
37	.104	.63	2.00	AV020140
36	.1065	.63	2.00	AV020145
7/64	.1094	.63	2.00	AV020150
35	.1100	.63	2.00	AV020155
34	.1110	.63	2.00	AV020160
33	.1130	.63	2.00	AV020165

2-FLUTE CARBIDE DRILLS STUB LENGTH FOR NON-FERROUS METALS

Diameter	Decimal	Flute Length	O.A.L.	Tool No.
32	.1160	.63	2.00	AV020170
31	.1200	.63	2.00	AV020175
1/8	.1250	.63	2.00	AV020180
30	.1285	.63	2.00	AV020185
29	.1360	.63	2.00	AV020190
28	.1405	.63	2.00	AV020195
9/64	.1406	.63	2.00	AV020200
27	.1440	.63	2.00	AV020205
26	.1470	.63	2.00	AV020210
25	.1495	.63	2.00	AV020215
24	.1520	.63	2.00	AV020220
23	.1540	.63	2.00	AV020225
5/32	.1562	.75	2.00	AV020230
22	.1570	.75	2.00	AV020235
21	.1590	.75	2.00	AV020240
20	.1610	.75	2.00	AV020245
19	.1660	.75	2.12	AV020250
18	.1695	.75	2.12	AV020255
11/64	.1719	.75	2.12	AV020260
17	.1730	.75	2.12	AV020265
16	.1770	.75	2.12	AV020270
15	.1800	.75	2.18	AV020275
14	.1820	.75	2.18	AV020280
13	.1850	.75	2.18	AV020285
3/16	.1875	.75	2.18	AV020290
12	.1890	.75	2.18	AV020295
11	.1910	.75	2.18	AV020300
10	.1935	.75	2.18	AV020305
9	.1960	.75	2.25	AV020310
8	.1990	.75	2.25	AV020315
7	.2010	.75	2.25	AV020320
13/64	.2031	.75	2.25	AV020325
6	.2040	.75	2.25	AV020330

Special sizes are available upon request.

With a short flute length and a 118 deg point, this tool provides high accuracy when drilling Cast iron, Aluminum, Bronze and Magnesium.



2-FLUTE CARBIDE DRILLS STUB LENGTH FOR NON-FERROUS METALS

Diameter	Decimal	Flute Length	O.A.L.	Tool No.
5	.2055	.75	2.25	AV020335
4	.2090	.75	2.25	AV020340
3	.2130	1.00	2.50	AV020345
7/32	.2187	1.00	2.50	AV020350
2	.2210	1.00	2.50	AV020355
1	.2280	1.00	2.50	AV020360
A	.2340	1.00	2.50	AV020365
15/64	.2344	1.00	2.50	AV020370
B	.2380	1.00	2.50	AV020375
C	.2420	1.00	2.50	AV020380
D	.2460	1.00	2.50	AV020385
1/4	.2500	1.00	2.50	AV020390
F	.2570	1.00	2.50	AV020395
G	.2610	1.00	2.50	AV020400
17/64	.2656	1.00	2.50	AV020405
H	.2660	1.00	2.50	AV020410
I	.2720	1.00	2.50	AV020415
J	.2770	1.00	2.50	AV020420
K	.2810	1.00	2.50	AV020425
9/32	.2812	1.00	2.50	AV020430
L	.2900	1.00	2.50	AV020435
M	.2950	1.25	2.50	AV020440
19/64	.2969	1.25	2.50	AV020445
N	.3020	1.25	2.50	AV020450
5/16	.3125	1.25	2.50	AV020455
O	.3160	1.25	2.50	AV020460
P	.3230	1.25	2.50	AV020465
21/64	.3281	1.25	2.50	AV020470
Q	.3320	1.25	2.50	AV020475
R	.3390	1.25	2.50	AV020480
11/32	.3438	1.25	2.50	AV020485
S	.3480	1.25	2.50	AV020490
T	.3580	1.25	2.50	AV020495

2-FLUTE CARBIDE DRILLS STUB LENGTH FOR NON-FERROUS METALS

Diameter	Decimal	Flute Length	O.A.L.	Tool No.
23/64	.3594	1.25	2.50	AV020500
U	.3680	1.25	2.50	AV020505
3/8	.3750	1.25	2.50	AV020510
V	.3770	1.25	2.50	AV020515
W	.3860	1.25	2.75	AV020520
25/64	.3906	1.25	2.75	AV020525
X	.3970	1.25	2.75	AV020530
Y	.4040	1.25	2.75	AV020535
13/32	.4062	1.25	2.75	AV020540
Z	.4130	1.25	2.75	AV020545
27/64	.4219	1.25	2.75	AV020550
7/16	.4375	1.25	2.75	AV020555
29/64	.4531	1.25	3.00	AV020560
15/32	.4688	1.25	3.00	AV020565
31/64	.4844	1.25	3.00	AV020570
1/2	.5000	1.25	3.00	AV020575
33/64	.5156	1.38	3.50	AV020580
17/32	.5312	1.38	3.50	AV020585
35/64	.5469	1.50	3.50	AV020590
9/16	.5625	1.50	3.50	AV020595
37/64	.5781	1.50	3.50	AV020600
19/32	.5938	1.50	3.50	AV020605
39/64	.6094	1.50	3.50	AV020610
5/8	.6250	1.50	3.50	AV020615
41/64	.6406	1.88	4.00	AV020620
21/32	.6562	1.88	4.00	AV020625
43/64	.6719	1.88	4.00	AV020630
11/16	.6875	1.88	4.00	AV020635
45/64	.7031	2.00	4.00	AV020640
23/32	.7188	2.12	4.00	AV020645
47/64	.7344	2.12	4.00	AV020650
3/4	.7500	2.12	4.00	AV020655

Special sizes are available upon request.

2-Flute Solid Carbide Drills

Jobbers Length for Non-Ferrous Metal



With a longer flute length and a 118 deg point, this tool provides better reach and enables the drilling of deeper holes when drilling Cast iron, Aluminum, Bronze and Magnesium.



2-FLUTE CARBIDE DRILLS JOBBER'S LENGTH FOR NON-FERROUS METALS

Diameter	Decimal	Flute Length	O.A.L.	Tool No.
60	.0400	.75	1.50	AV020660
59	.0410	.75	1.50	AV020665
58	.0420	.75	1.50	AV020670
57	.0430	.75	1.50	AV020675
56	.0465	.75	1.50	AV020680
3/64	.0469	.75	1.50	AV020685
55	.0520	.75	1.50	AV020690
54	.0550	.75	1.50	AV020695
53	.0595	.75	1.50	AV020700
1/16	.0625	.75	1.50	AV020705
52	.0635	.75	1.50	AV020710
51	.0670	.75	1.50	AV020715
50	.0700	.88	1.75	AV020720
49	.0730	.88	1.75	AV020725
48	.0760	.88	1.75	AV020730
5/64	.0781	.88	1.75	AV020735
47	.0785	.88	1.75	AV020740
46	.0810	.88	1.75	AV020745
45	.0820	.88	1.75	AV020750
44	.0860	1.00	2.00	AV020755
43	.0890	1.00	2.00	AV020760
42	.0935	1.00	2.00	AV020765
3/32	.0938	1.00	2.00	AV020770
41	.0960	1.00	2.00	AV020775
40	.0980	1.00	2.00	AV020780
39	.0995	1.25	2.25	AV020785
38	.1015	1.25	2.25	AV020790
37	.104	1.25	2.25	AV020795
36	.1065	1.25	2.25	AV020800
7/64	.1094	1.25	2.25	AV020805
35	.1100	1.25	2.25	AV020810
34	.1110	1.25	2.25	AV020815
33	.1130	1.25	2.25	AV020820

2-FLUTE CARBIDE DRILLS JOBBER'S LENGTH FOR NON-FERROUS METALS

Diameter	Decimal	Flute Length	O.A.L.	Tool No.
32	.1160	1.25	2.25	AV020825
31	.1200	1.25	2.25	AV020830
1/8	.1250	1.25	2.25	AV020835
30	.1285	1.25	2.25	AV020840
29	.1360	1.38	2.50	AV020845
28	.1405	1.38	2.50	AV020850
9/64	.1406	1.38	2.50	AV020855
27	.1440	1.38	2.50	AV020860
26	.1470	1.38	2.50	AV020865
25	.1495	1.38	2.50	AV020870
24	.1520	1.38	2.50	AV020875
23	.1540	1.38	2.50	AV020880
5/32	.1562	1.38	2.50	AV020885
22	.1570	1.38	2.50	AV020890
21	.1590	1.38	2.50	AV020895
20	.1610	1.38	2.50	AV020900
19	.1660	1.63	2.75	AV020905
18	.1695	1.63	2.75	AV020910
11/64	.1719	1.63	2.75	AV020915
17	.1730	1.63	2.75	AV020920
16	.1770	1.63	2.75	AV020925
15	.1800	1.63	2.75	AV020930
14	.1820	1.63	2.75	AV020935
13	.1850	1.63	2.75	AV020940
3/16	.1875	1.63	2.75	AV020945
12	.1890	1.63	2.75	AV020950
11	.1910	1.63	2.75	AV020955
10	.1935	1.63	2.75	AV020960
9	.1960	1.75	3.00	AV020965
8	.1990	1.75	3.00	AV020970
7	.2010	1.75	3.00	AV020975
13/64	.2031	1.75	3.00	AV020980
6	.2040	1.75	3.00	AV020985

Special sizes are available upon request.

With a longer flute length and a 118 deg point, this tool provides better reach and enables the drilling of deeper holes when drilling Cast iron, Aluminum, Bronze and Magnesium.



2-FLUTE CARBIDE DRILLS JOBBER'S LENGTH FOR NON-FERROUS METALS

Diameter	Decimal	Flute Length	O.A.L.	Tool No.
5	.2055	1.75	3.00	AV020990
4	.2090	1.75	3.00	AV020995
3	.2130	1.75	3.00	AV021000
7/32	.2187	1.75	3.00	AV021005
2	.2210	1.75	3.00	AV021010
1	.2280	1.75	3.00	AV021015
A	.2340	2.00	3.25	AV021020
15/64	.2344	2.00	3.25	AV021025
B	.2380	2.00	3.25	AV021030
C	.2420	2.00	3.25	AV021035
D	.2460	2.00	3.25	AV021040
1/4	.2500	2.00	3.25	AV021045
F	.2570	2.00	3.25	AV021050
G	.2610	2.12	3.50	AV021055
17/64	.2656	2.12	3.50	AV021060
H	.2660	2.12	3.50	AV021065
I	.2720	2.12	3.50	AV021070
J	.2770	2.12	3.50	AV021075
K	.2810	2.12	3.50	AV021080
9/32	.2812	2.12	3.50	AV021085
L	.2900	2.12	3.50	AV021090
M	.2950	2.38	3.75	AV021095
19/64	.2969	2.38	3.75	AV021100
N	.3020	2.38	3.75	AV021105
5/16	.3125	2.38	3.75	AV021110
O	.3160	2.38	3.75	AV021115
P	.3230	2.38	3.75	AV021120
21/64	.3281	2.50	4.00	AV021125
Q	.3320	2.50	4.00	AV021130
R	.3390	2.50	4.00	AV021135
11/32	.3438	2.50	4.00	AV021140
S	.3480	2.50	4.00	AV021145
T	.3580	2.75	4.25	AV021150

2-FLUTE CARBIDE DRILLS JOBBER'S LENGTH FOR NON-FERROUS METALS

Diameter	Decimal	Flute Length	O.A.L.	Tool No.
23/64	.3594	2.75	4.25	AV021155
U	.3680	2.75	4.25	AV021160
3/8	.3750	2.75	4.25	AV021165
V	.3770	2.88	4.50	AV021170
W	.3860	2.88	4.50	AV021175
25/64	.3906	2.88	4.50	AV021180
X	.3970	2.88	4.50	AV021185
Y	.4040	2.88	4.50	AV021190
13/32	.4062	2.88	4.50	AV021195
Z	.4130	2.88	4.50	AV021200
27/64	.4219	2.88	4.50	AV021205
7/16	.4375	2.88	4.50	AV021210
29/64	.4531	3.00	4.75	AV021215
15/32	.4688	3.00	4.75	AV021220
31/64	.4844	3.00	4.75	AV021225
1/2	.5000	3.00	4.75	AV021230
33/64	.5156	3.25	5.00	AV021235
17/32	.5312	3.25	5.00	AV021240
35/64	.5469	3.25	5.00	AV021245
9/16	.5625	3.25	5.00	AV021250
37/64	.5781	3.50	5.25	AV021255
19/32	.5938	3.50	5.25	AV021260
39/64	.6094	3.50	5.25	AV021265
5/8	.6250	3.50	5.25	AV021270
41/64	.6406	3.63	5.25	AV021275
21/32	.6562	3.63	5.25	AV021280
43/64	.6719	3.63	5.25	AV021285
11/16	.6875	3.63	5.25	AV021290
45/64	.7031	3.88	5.75	AV021295
23/32	.7188	3.88	5.75	AV021300
47/64	.7344	3.88	5.75	AV021305
3/4	.7500	3.88	5.75	AV021310

Special sizes are available upon request.

2-Flute Solid Carbide Drills

Stainless Steels, Tool Steels, and Titanium



The heavy web design and 135 deg point provide the strength you need to penetrate these hard to machine materials.



2-FLUTE CARBIDE DRILLS STAINLESS STEELS, TOOL STEELS, AND TITANIUM

Diameter	Decimal	Flute Length	O.A.L.	Tool No.
60	.0400	.50	1.50	AV021315
59	.0410	.50	1.50	AV021320
58	.0420	.50	1.50	AV021325
57	.0430	.50	1.50	AV021330
56	.0465	.50	1.50	AV021335
3/64	.0469	.50	1.50	AV021340
55	.0520	.63	1.63	AV021345
54	.0550	.63	1.63	AV021350
53	.0595	.63	1.63	AV021355
1/16	.0625	.63	1.63	AV021360
52	.0635	.68	1.68	AV021365
51	.0670	.68	1.68	AV021370
50	.0700	.68	1.68	AV021375
49	.0730	.68	1.68	AV021380
48	.0760	.68	1.68	AV021385
5/64	.0781	.68	1.68	AV021390
47	.0785	.75	1.75	AV021395
46	.0810	.75	1.75	AV021400
45	.0820	.75	1.75	AV021405
44	.0860	.75	1.75	AV021410
43	.0890	.75	1.75	AV021415
42	.0935	.75	1.75	AV021420
3/32	.0938	.75	1.75	AV021425
41	.0960	.81	1.81	AV021430
40	.0980	.81	1.81	AV021435
39	.0995	.81	1.81	AV021440
38	.1015	.81	1.81	AV021445
37	.104	.81	1.81	AV021450
36	.1065	.81	1.81	AV021455
7/64	.1094	.81	1.81	AV021460
35	.1100	.88	1.88	AV021465
34	.1110	.88	1.88	AV021470
33	.1130	.88	1.88	AV021475

2-FLUTE CARBIDE DRILLS STAINLESS STEELS, TOOL STEELS, AND TITANIUM

Diameter	Decimal	Flute Length	O.A.L.	Tool No.
32	.1160	.88	1.88	AV021480
31	.1200	.88	1.88	AV021485
1/8	.1250	.88	1.88	AV021490
30	.1285	.94	1.94	AV021495
29	.1360	.94	1.94	AV021500
28	.1405	.94	1.94	AV021505
9/64	.1406	.94	1.94	AV021510
27	.1440	1.00	2.06	AV021515
26	.1470	1.00	2.06	AV021520
25	.1495	1.00	2.06	AV021525
24	.1520	1.00	2.06	AV021530
23	.1540	1.00	2.06	AV021535
5/32	.1562	1.00	2.06	AV021540
22	.1570	1.06	2.12	AV021545
21	.1590	1.06	2.12	AV021550
20	.1610	1.06	2.12	AV021555
19	.1660	1.06	2.12	AV021560
18	.1695	1.06	2.12	AV021565
11/64	.1719	1.06	2.12	AV021570
17	.1730	1.12	2.18	AV021575
16	.1770	1.12	2.18	AV021580
15	.1800	1.12	2.18	AV021585
14	.1820	1.12	2.18	AV021590
13	.1850	1.12	2.18	AV021595
3/16	.1875	1.12	2.18	AV021600
12	.1890	1.18	2.25	AV021605
11	.1910	1.18	2.25	AV021610
10	.1935	1.18	2.25	AV021615
9	.1960	1.18	2.25	AV021620
8	.1990	1.18	2.25	AV021625
7	.2010	1.18	2.25	AV021630
13/64	.2031	1.18	2.25	AV021635
6	.2040	1.25	2.38	AV021640

Special sizes are available upon request.

The heavy web design and 135 deg point provide the strength you need to penetrate these hard to machine materials.



2-FLUTE CARBIDE DRILLS STAINLESS STEELS, TOOL STEELS, and TITANIUM

Diameter	Decimal	Flute Length	O.A.L.	Tool No.
5	.2055	1.25	2.38	AV021645
4	.2090	1.25	2.38	AV021650
3	.2130	1.25	2.38	AV021655
7/32	.2187	1.25	2.38	AV021660
2	.2210	1.31	2.43	AV021665
1	.2280	1.31	2.43	AV021670
A	.2340	1.31	2.43	AV021675
15/64	.2344	1.31	2.43	AV021680
B	.2380	1.38	2.50	AV021685
C	.2420	1.38	2.50	AV021690
D	.2460	1.38	2.50	AV021695
1/4	.2500	1.38	2.50	AV021700
F	.2570	1.43	2.63	AV021705
G	.2610	1.43	2.63	AV021710
17/64	.2656	1.43	2.63	AV021715
H	.2660	1.50	2.68	AV021720
I	.2720	1.50	2.68	AV021725
J	.2770	1.50	2.68	AV021730
K	.2810	1.50	2.68	AV021735
9/32	.2812	1.50	2.68	AV021740
L	.2900	1.56	2.75	AV021745
M	.2950	1.56	2.75	AV021750
19/64	.2969	1.56	2.75	AV021755
N	.3020	1.63	2.81	AV021760
5/16	.3125	1.63	2.81	AV021765
O	.3160	1.68	2.94	AV021770
P	.3230	1.68	2.94	AV021775
21/64	.3281	1.68	2.94	AV021780
Q	.3320	1.68	2.94	AV021785
R	.3390	1.68	2.94	AV021790
11/32	.3438	1.68	2.94	AV021795
S	.3480	1.75	3.06	AV021800
T	.3580	1.75	3.06	AV021805
23/64	.3594	1.75	3.06	AV021810

2-FLUTE CARBIDE DRILLS STAINLESS STEELS, TOOL STEELS, and TITANIUM

Diameter	Decimal	Flute Length	O.A.L.	Tool No.
U	.3680	1.81	3.12	AV021815
3/8	.3750	1.81	3.12	AV021820
V	.3770	1.88	3.25	AV021825
W	.3860	1.88	3.25	AV021830
25/64	.3906	1.88	3.25	AV021835
X	.3970	1.94	3.31	AV021840
Y	.4040	1.94	3.31	AV021845
13/32	.4062	1.94	3.31	AV021850
Z	.4130	2.00	3.38	AV021855
27/64	.4219	2.00	3.38	AV021860
7/16	.4375	2.06	3.43	AV021865
29/64	.4531	2.12	3.63	AV021870
15/32	.4688	2.12	3.63	AV021875
31/64	.4844	2.18	3.68	AV021880
1/2	.5000	2.25	3.75	AV021885
33/64	.5156	2.38	3.88	AV021890
17/32	.5312	2.38	3.88	AV021895
35/64	.5469	2.50	4.00	AV021900
9/16	.5625	2.50	4.00	AV021905
37/64	.5781	2.63	4.12	AV021910
19/32	.5938	2.63	4.12	AV021915
39/64	.6094	2.75	4.25	AV021920
5/8	.6250	2.75	4.25	AV021925
41/64	.6406	2.88	4.50	AV021930
21/32	.6562	2.88	4.50	AV021935
43/64	.6719	2.88	4.63	AV021940
11/16	.6875	2.88	4.63	AV021945
45/64	.7031	3.00	4.75	AV021950
23/32	.7188	3.00	4.75	AV021955
47/64	.7344	3.12	5.00	AV021960
3/4	.7500	3.12	5.00	AV021965

Special sizes are available upon request.

3-Flute Solid Carbide Drills



AVA Series-Geometry for non ferrous materials, aluminum, copper alloys etc...



AVS Series-Geometry for alloys steels, stainless steels etc...



3-FLUTE CARBIDE DRILLS

Diameter	Decimal	Flute Length	O.A.L.	AVA Tool No.	AVS Tool No.	Diameter	Decimal	Flute Length	O.A.L.	AVA Tool No.	AVS Tool No.
7/64	.1094	.75	1.88	AV030005	AV030260	17/64	.2656	1.25	2.62	AV030515	AV030770
35	.1100	.75	1.88	AV030010	AV030265	H	.2660	1.31	2.68	AV030520	AV030775
34	.1110	.75	1.88	AV030015	AV030270	I	.2720	1.31	2.68	AV030525	AV030780
33	.1130	.75	1.88	AV030020	AV030275	J	.2770	1.31	2.68	AV030530	AV030785
32	.1160	.75	1.88	AV030025	AV030280	K	.2810	1.31	2.68	AV030535	AV030790
31	.1200	.75	1.88	AV030030	AV030285	9/32	.2812	1.31	2.68	AV030540	AV030795
1/8	.1250	.75	1.88	AV030035	AV030290	L	.2900	1.38	2.75	AV030545	AV030800
30	.1285	.81	1.94	AV030040	AV030295	M	.2950	1.38	2.75	AV030550	AV030805
29	.1360	.81	1.94	AV030045	AV030300	19/64	.2969	1.38	2.75	AV030555	AV030810
28	.1405	.81	1.94	AV030050	AV030305	N	.3020	1.44	2.81	AV030560	AV030815
9/64	.1406	.81	1.94	AV030055	AV030310	5/16	.3125	1.44	2.81	AV030565	AV030820
27	.1440	.84	2.06	AV030060	AV030315	O	.3160	1.50	2.94	AV030570	AV030825
26	.1470	.84	2.06	AV030065	AV030320	P	.3230	1.50	2.94	AV030575	AV030830
25	.1495	.84	2.06	AV030070	AV030325	21/64	.3281	1.50	2.94	AV030580	AV030835
24	.1520	.84	2.06	AV030075	AV030330	Q	.3320	1.50	2.94	AV030585	AV030840
23	.1540	.84	2.06	AV030080	AV030335	R	.3390	1.50	2.94	AV030590	AV030845
5/32	.1562	.84	2.06	AV030085	AV030340	11/32	.3438	1.50	2.94	AV030595	AV030850
22	.1570	.88	2.12	AV030090	AV030345	S	.3480	1.56	3.06	AV030600	AV030855
21	.1590	.88	2.12	AV030095	AV030350	T	.3580	1.56	3.06	AV030605	AV030860
20	.1610	.88	2.12	AV030100	AV030355	23/64	.3594	1.56	3.06	AV030610	AV030865
19	.1660	.88	2.12	AV030105	AV030360	U	.3680	1.59	3.12	AV030615	AV030870
18	.1695	.88	2.12	AV030110	AV030365	3/8	.3750	1.59	3.12	AV030620	AV030875
11/64	.1719	.88	2.12	AV030115	AV030370	V	.3770	1.62	3.25	AV030625	AV030880
17	.1730	.94	2.18	AV030120	AV030375	W	.3860	1.62	3.25	AV030630	AV030885
16	.1770	.94	2.18	AV030125	AV030380	25/64	.3906	1.62	3.25	AV030635	AV030890
15	.1800	.94	2.18	AV030130	AV030385	X	.3970	1.62	3.31	AV030640	AV030895
14	.1820	.94	2.18	AV030135	AV030390	Y	.4040	1.62	3.31	AV030645	AV030900
13	.1850	.94	2.18	AV030140	AV030395	13/32	.4062	1.62	3.31	AV030650	AV030905
3/16	.1875	.94	2.18	AV030145	AV030400	Z	.4130	1.65	3.38	AV030655	AV030910
12	.1890	1.00	2.25	AV030150	AV030405	27/64	.4219	1.65	3.38	AV030660	AV030915
11	.1910	1.00	2.25	AV030155	AV030410	7/16	.4375	1.75	3.44	AV030665	AV030920
10	.1935	1.00	2.25	AV030160	AV030415	29/64	.4531	1.88	3.62	AV030670	AV030925
9	.1960	1.00	2.25	AV030165	AV030420	15/32	.4688	1.88	3.62	AV030675	AV030930
8	.1990	1.00	2.25	AV030170	AV030425	31/64	.4844	2.00	3.68	AV030680	AV030935
7	.2010	1.00	2.25	AV030175	AV030430	1/2	.5000	2.00	3.75	AV030685	AV030940
13/64	.2031	1.00	2.25	AV030180	AV030435	33/64	.5156	2.00	3.88	AV030690	AV030945
6	.2040	1.06	2.38	AV030185	AV030440	17/32	.5312	2.00	3.88	AV030695	AV030950
5	.2055	1.06	2.38	AV030190	AV030445	35/64	.5469	2.12	4.00	AV030700	AV030955
4	.2090	1.06	2.38	AV030195	AV030450	9/16	.5625	2.12	4.00	AV030705	AV030960
3	.2130	1.06	2.38	AV030200	AV030455	37/64	.5781	2.12	4.12	AV030710	AV030965
7/32	.2187	1.06	2.38	AV030205	AV030460	19/32	.5938	2.12	4.12	AV030715	AV030970
2	.2210	1.12	2.44	AV030210	AV030465	39/64	.6094	2.25	4.25	AV030720	AV030975
1	.2280	1.12	2.44	AV030215	AV030470	5/8	.6250	2.25	4.25	AV030725	AV030980
A	.2340	1.12	2.44	AV030220	AV030475	41/64	.6406	2.88	4.50	AV030730	AV030985
15/64	.2344	1.12	2.44	AV030225	AV030480	21/32	.6562	2.88	4.50	AV030735	AV030990
B	.2380	1.18	2.50	AV030230	AV030485	43/64	.6719	2.88	4.50	AV030740	AV030995
C	.2420	1.18	2.50	AV030235	AV030490	11/16	.6875	2.88	4.62	AV030745	AV031000
D	.2460	1.18	2.50	AV030240	AV030495	45/64	.7031	3.00	4.75	AV030750	AV031005
1/4	.2500	1.18	2.50	AV030245	AV030500	23/32	.7188	3.00	4.75	AV030755	AV031010
F	.2570	1.25	2.62	AV030250	AV030505	47/64	.7344	3.12	5.00	AV030760	AV031015
G	.2610	1.25	2.62	AV030255	AV030510	3/4	.7500	3.12	5.00	AV030765	AV031020

Special sizes are available upon request.

The following recommended feeds and speeds are starting points. Actual parameters will vary considerably when the Optimum parameters are established for each application.

- Aluminum Non-Ferrous Metals

- Stainless, Alloys Steel, Exotic Metals

Material	SFM	DIA	1/16	1/8	1/4	1/2	3/4
Aluminum Alloys	350	RPM	21000	10000	5300	2600	1700
	1000	RPM	60000	30000	15000	7500	5000
		IPR	.003	.008	.014	.022	.030
Steels	75	RPM	4700	2200	1100	500	380
	250	RPM	15000	7500	3800	1900	1250
		IPR	.001-.002	.002-.003	.002-.006	.004-.012	.004-.012

SPEED AND FEED REDUCTION (FOR DEEPER HOLES)

Hole Depth Diameter Ratio (times drill diameter)	Speed Reduction	Feed Reduction
3	10%	10%
4	20%	10%
5	30%	20%
6	30-40%	20-25%

N/C Spot Drills

Powder Metallurgy Series - Carbide Series



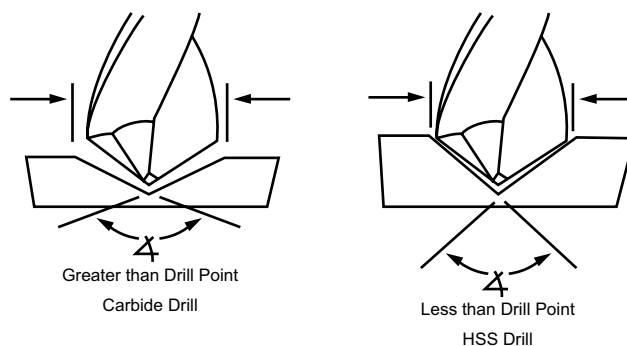
Our precision ground spot drills provide excellent positioning for N/C drilling operations.

Powder Metallurgy Series -Economical way of ensuring exact hole positioning.

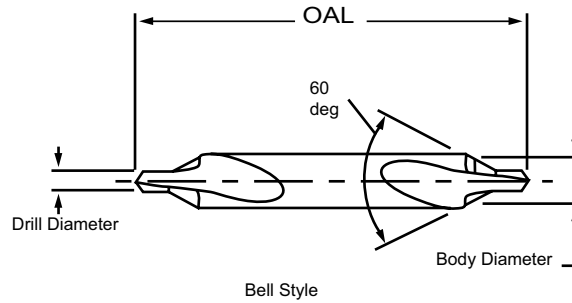
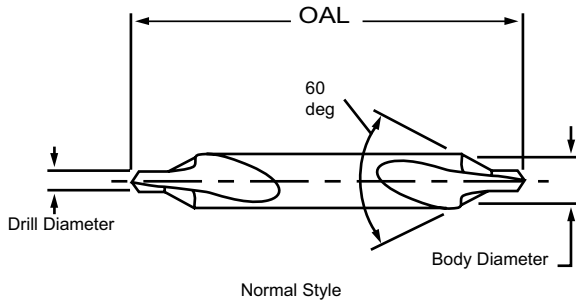
Carbide Series -Provides long tool life and the rigid carbide ensures even better hole positioning.



POWDER METALLURGY SERIES - CARBIDE SERIES								
Diameter	O.A.L.	Powder Metallurgy			Solid Carbide			
		90 deg	120 deg	140 deg	90 deg	120 deg	140 deg	
1/8 (.125)	3-3/4	AV040005	AV040125	AV040245	AV040365	AV040485	AV040605	
1/4 (.250)	2-1/2	AV040010	AV040130	AV040250	AV040370	AV040490	AV040610	
1/4 (.250)	4.0	AV040015	AV040135	AV040255	AV040375	AV040495	AV040615	
1/4 (.250)	6.0	AV040020	AV040140	AV040260	AV040380	AV040500	AV040620	
5/16 (.312)	3-1/8	AV040025	AV040145	AV040265	AV040385	AV040505	AV040625	
5/16 (.312)	5.0	AV040030	AV040150	AV040270	AV040390	AV040510	AV040630	
3/8 (.375)	3-1/8	AV040035	AV040155	AV040275	AV040395	AV040515	AV040635	
3/8 (.375)	5.0	AV040040	AV040160	AV040280	AV040400	AV040520	AV040640	
3/8 (.375)	7.0	AV040045	AV040165	AV040285	AV040405	AV040525	AV040645	
7/16 (.437)	3-1/8	AV040050	AV040170	AV040290	AV040410	AV040530	AV040650	
7/16 (.437)	5.0	AV040055	AV040175	AV040295	AV040415	AV040535	AV040655	
7/16 (.437)	7.0	AV040060	AV040180	AV040300	AV040420	AV040540	AV040660	
1/2 (.500)	3-3/4	AV040065	AV040185	AV040305	AV040425	AV040545	AV040665	
1/2 (.500)	6.0	AV040070	AV040190	AV040310	AV040430	AV040550	AV040670	
1/2 (.500)	8.0	AV040075	AV040195	AV040315	AV040435	AV040555	AV040675	
5/8 (.625)	4-3/8	AV040080	AV040200	AV040320	AV040440	AV040560	AV040680	
5/8 (.625)	7.0	AV040085	AV040205	AV040325	AV040445	AV040565	AV040685	
5/8 (.625)	9.0	AV040090	AV040210	AV040330	AV040450	AV040570	AV040690	
3/4 (.750)	5.0	AV040095	AV040215	AV040335	AV040455	AV040575	AV040695	
3/4 (.750)	8.0	AV040100	AV040220	AV040340	AV040460	AV040580	AV040700	
3/4 (.750)	10.0	AV040105	AV040225	AV040345	AV040465	AV040585	AV040705	
1.000	6.0	AV040110	AV040230	AV040350	AV040470	AV040590	AV040710	
1.000	8.0	AV040115	AV040235	AV040355	AV040475	AV040595	AV040715	
1.000	10.0	AV040120	AV040240	AV040360	AV040480	AV040600	AV040720	



Spotting Techniques



STANDARD AND EXTENDED LENGTH

Size	Body Diameter	Drill Diameter	O.A.L.	HSS Tool No.		Cobalt Tool No.		Carbide Tool No.	
				Standard Type	Bell Type	Standard Type	Bell Type	Standard Type	Bell Type
000	.125	.020	1.25	AV050005	AV050190	AV050375	AV050560	AV050745	AV050930
00	.125	.025	1.25	AV050010	AV050195	AV050380	AV050565	AV050750	AV050935
0	.125	.031	1.25	AV050015	AV050200	AV050385	AV050570	AV050755	AV050940
1	.125	.046	1.25	AV050020	AV050205	AV050390	AV050575	AV050760	AV050945
1	.125	.046	3.00	AV050025	AV050210	AV050395	AV050580	AV050765	AV050950
1	.125	.046	4.00	AV050030	AV050215	AV050400	AV050585	AV050770	AV050955
1	.125	.046	5.00	AV050035	AV050220	AV050405	AV050590	AV050775	AV050960
1	.125	.046	6.00	AV050040	AV050225	AV050410	AV050595	AV050780	AV050965
2	.187	.078	1.88	AV050045	AV050230	AV050415	AV050600	AV050785	AV050970
2	.187	.078	3.00	AV050050	AV050235	AV050420	AV050605	AV050790	AV050975
2	.187	.078	4.00	AV050055	AV050240	AV050425	AV050610	AV050795	AV050980
2	.187	.078	5.00	AV050060	AV050245	AV050430	AV050615	AV050800	AV050985
2	.187	.078	6.00	AV050065	AV050250	AV050435	AV050620	AV050805	AV050990
3	.250	.109	2.00	AV050070	AV050255	AV050440	AV050625	AV050810	AV050995
3	.250	.109	4.00	AV050075	AV050260	AV050445	AV050630	AV050815	AV051000
3	.250	.109	5.00	AV050080	AV050265	AV050450	AV050635	AV050820	AV051005
3	.250	.109	6.00	AV050085	AV050270	AV050455	AV050640	AV050825	AV051010
4	.312	.125	2.12	AV050090	AV050275	AV050460	AV050645	AV050830	AV051015
4	.312	.125	4.00	AV050095	AV050280	AV050465	AV050650	AV050835	AV051020
4	.312	.125	5.00	AV050100	AV050285	AV050470	AV050655	AV050840	AV051025
4	.312	.125	6.00	AV050105	AV050290	AV050475	AV050660	AV050845	AV051030
4-1/2	.375	.140	2.50	AV050110	AV050295	AV050480	AV050665	AV050850	AV051035
4-1/2	.375	.140	6.00	AV050115	AV050300	AV050485	AV050670	AV050855	AV051040
5	.437	.187	2.75	AV050120	AV050305	AV050490	AV050675	AV050860	AV051045
5	.437	.187	4.00	AV050125	AV050310	AV050495	AV050680	AV050865	AV051050
5	.437	.187	5.00	AV050130	AV050315	AV050500	AV050685	AV050870	AV051055
5	.437	.187	6.00	AV050135	AV050320	AV050505	AV050690	AV050875	AV051060
6	.500	.218	3.00	AV050140	AV050325	AV050510	AV050695	AV050880	AV051065
6	.500	.218	4.00	AV050145	AV050330	AV050515	AV050700	AV050885	AV051070
6	.500	.218	5.00	AV050150	AV050335	AV050520	AV050705	AV050890	AV051075
6	.500	.218	6.00	AV050155	AV050340	AV050525	AV050710	AV050895	AV051080
7	.625	.250	3.25	AV050160	AV050345	AV050530	AV050715	AV050900	AV051085
7	.625	.250	6.00	AV050165	AV050350	AV050535	AV050720	AV050905	AV051090
8	.750	.312	3.50	AV050170	AV050355	AV050540	AV050725	AV050910	AV051095
8	.750	.312	6.00	AV050175	AV050360	AV050545	AV050730	AV050915	AV051100
9	.875	.343	3.62	AV050180	AV050365	AV050550	AV050735	AV050920	AV051105
10	1.00	.375	3.75	AV050185	AV050370	AV050555	AV050740	AV050925	AV051110



Solid Carbide Chucking Reamers



SOLID CARBIDE CHUCKING REAMERS

Dia.	Dec. Equiv.	Flute Length	OAL	Tool No. Str. Helix	Tool No. R/H Helix
1/32	.0312	5/16	1 3/8	AV080470	AV080775
#67	.0320	5/16	1 3/8	AV080475	AV080780
#66	.0330	5/16	1 3/8	AV080480	AV080785
#65	.0350	5/16	1 3/8	AV080485	AV080790
#64	.0360	5/16	1 3/8	AV080490	AV080795
#63	.0370	5/16	1 3/8	AV080495	AV080800
#62	.0380	5/16	1 3/8	AV080500	AV080805
#61	.0390	5/16	1 3/8	AV080505	AV080810
1.00 mm	.0394	5/16	1 3/8	AV080510	AV080815
#60	.0400	5/16	1 3/8	AV080515	AV080820
#59	.0410	5/16	1 3/8	AV080520	AV080825
#58	.0420	5/16	1 3/8	AV080525	AV080830
#57	.0430	5/16	1 3/8	AV080530	AV080835
#56	.0465	5/16	1 3/8	AV080535	AV080840
3/64	.0469	5/16	1 3/8	AV080540	AV080845
1.20 mm	.0472	8	35	AV080545	AV080850
1.25 mm	.0492	10	38	AV080550	AV080855
1.30 mm	.0512	10	38	AV080555	AV080860
#55	.0520	3/8	1 1/2	AV080560	AV080865
1.35 mm	.0531	10	38	AV080565	AV080870
#54	.0550	3/8	1 1/2	AV080570	AV080875
1.40 mm	.0551	10	38	AV080575	AV080880
1.45 mm	.0571	10	38	AV080580	AV080885
1.50 mm	.0591	10	38	AV080585	AV080890
#53	.0595	3/8	1 1/2	AV080590	AV080895
1.55 mm	.0610	10	38	AV080595	AV080900
1/16	.0625	3/8	1 1/2	AV080600	AV080905
1.60 mm	.0630	10	38	AV080605	AV080910
#52	.0635	3/8	1 1/2	AV080610	AV080915
1.65 mm	.0650	10	38	AV080615	AV080920
1.70 mm	.0669	11	44	AV080620	AV080925
#51	.0670	7/16	1 3/4	AV080625	AV080930
1.75 mm	.0689	11	44	AV080630	AV080935
#50	.0700	7/16	1 3/4	AV080635	AV080940
1.80 mm	.0709	11	44	AV080640	AV080945
1.85 mm	.0728	11	44	AV080645	AV080950
#49	.0730	7/16	1 3/4	AV080650	AV080955
1.90 mm	.0748	11	44	AV080655	AV080960
#48	.0760	7/16	1 3/4	AV080660	AV080965
1.95 mm	.0768	11	44	AV080665	AV080970
5/64	.0781	7/16	1 3/4	AV080670	AV080975
#47	.0785	7/16	1 3/4	AV080675	AV080980
2.00 mm	.0787	11	44	AV080680	AV080985
2.05 mm	.0807	13	51	AV080685	AV080990
#46	.0810	1/2	2	AV080690	AV080995
#45	.0820	1/2	2	AV080695	AV081000
2.10 mm	.0827	13	51	AV080700	AV081005
2.15 mm	.0846	13	51	AV080705	AV081010
#44	.0860	1/2	2	AV080710	AV081015
2.20 mm	.0866	13	51	AV080715	AV081020
2.25 mm	.0886	13	51	AV080720	AV081025
#43	.0890	1/2	2	AV080725	AV081030
2.30 mm	.0906	13	51	AV080730	AV081035
2.35 mm	.0925	13	51	AV080735	AV081040
#42	.0935	1/2	2	AV080740	AV081045
3/32	.0938	1/2	2	AV080745	AV081050
2.40 mm	.0945	13	51	AV080750	AV081055
#41	.0960	5/8	2 1/4	AV080755	AV081060
2.45	.0965	16	57	AV080760	AV081065
#40	.0980	5/8	2 1/4	AV080765	AV081070
2.50 mm	.0984	16	57	AV080770	AV081075

SOLID CARBIDE CHUCKING REAMERS

Dia.	Dec. Equiv.	Flute Length	OAL	Tool No. Str. Helix	Tool No. R/H Helix
#39	.0995	5/8	2 1/4	AV081080	AV081385
#38	.1015	5/8	2 1/4	AV081085	AV081390
2.60 mm	.1024	16	57	AV081090	AV081395
#37	.1040	5/8	2 1/4	AV081095	AV081400
2.70 mm	.1063	16	57	AV081100	AV081405
#36	.1065	5/8	2 1/4	AV081105	AV081410
2.75 mm	.1083	16	57	AV081110	AV081415
7/64	.1094	5/8	2 1/4	AV081115	AV081420
#35	.1100	5/8	2 1/4	AV081120	AV081425
2.80 mm	.1102	16	57	AV081125	AV081430
#34	.1110	5/8	2 1/4	AV081130	AV081435
#33	.1130	5/8	2 1/4	AV081135	AV081440
2.90 mm	.1142	16	57	AV081140	AV081445
#32	.1160	5/8	2 1/4	AV081145	AV081450
3.00 mm	.1181	16	57	AV081150	AV081455
#31	.1200	5/8	2 1/4	AV081155	AV081460
3.10 mm	.1220	16	57	AV081160	AV081465
-	.1240	5/8	2 1/4	AV081165	AV081470
-	.1245	5/8	2 1/4	AV081170	AV081475
1/8	.1250	5/8	2 1/4	AV081175	AV081480
3.20 mm	.1260	16	57	AV081180	AV081485
3.25 mm	.1280	16	57	AV081185	AV081490
#30	.1285	3/4	2 1/4	AV081190	AV081495
3.30 mm	.1299	19	57	AV081195	AV081500
3.35 mm	.1319	19	57	AV081200	AV081505
3.40 mm	.1339	19	57	AV081205	AV081510
3.45 mm	.1358	19	57	AV081210	AV081515
#29	.1360	3/4	2 1/4	AV081215	AV081520
3.50 mm	.1378	19	57	AV081220	AV081525
3.55 mm	.1398	19	57	AV081225	AV081530
#28	.1405	3/4	2 1/4	AV081230	AV081535
9/64	.1406	3/4	2 1/4	AV081235	AV081540
3.60 mm	.1417	19	57	AV081240	AV081545
3.65 mm	.1437	19	57	AV081245	AV081550
#27	.1440	3/4	2 1/4	AV081250	AV081555
3.70 mm	.1457	19	57	AV081255	AV081560
#26	.1470	3/4	2 1/4	AV081260	AV081565
3.75 mm	.1476	19	57	AV081265	AV081570
#25	.1495	3/4	2 1/4	AV081270	AV081575
3.80 mm	.1496	19	57	AV081275	AV081580
#24	.1520	3/4	2 1/4	AV081280	AV081585
3.90 mm	.1535	19	57	AV081285	AV081590
#23	.1540	3/4	2 1/4	AV081290	AV081595
3.95 mm	.1555	19	57	AV081295	AV081600
5/32	.1562	3/4	2 1/4	AV081300	AV081605
#22	.1570	3/4	2 1/4	AV081305	AV081610
4.00 mm	.1575	19	57	AV081310	AV081615
#21	.1590	3/4	2 1/4	AV081315	AV081620
4.05 mm	.1594	19	57	AV081320	AV081625
#20	.1610	7/8	2 3/4	AV081325	AV081630
4.10 mm	.1614	22	70	AV081330	AV081635
4.15 mm	.1634	22	70	AV081335	AV081640
4.20 mm	.1654	22	70	AV081340	AV081645
#19	.1660	7/8	2 3/4	AV081345	AV081650
4.25 mm	.1673	22	70	AV081350	AV081655
4.30 mm	.1693	22	70	AV081355	AV081660
#18	.1695	7/8	2 3/4	AV081360	AV081665
4.35 mm	.1713	22	70	AV081365	AV081670
11/64	.1719	7/8	2 3/4	AV081370	AV081675
#17	.1730	7/8	2 3/4	AV081375	AV081680
4.40 mm	.1732	22	70	AV081380	AV081685

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Dia.	Dec. Equiv.	Flute Length	OAL	Tool No. Str. Helix	Tool No. R/H Helix
4.45 mm	.1752	22	70	AV081690	AV081975
#16	.1770	7/8	2 3/4	AV081695	AV081980
4.50 mm	.1772	22	70	AV081700	AV081985
4.55 mm	.1791	22	70	AV081705	AV081990
#15	.1800	7/8	2 3/4	AV081710	AV081995
4.60 mm	.1811	22	70	AV081715	AV082000
#14	.1820	7/8	2 3/4	AV081720	AV082005
4.65 mm	.1831	22	70	AV081725	AV082010
#13	.1850	7/8	2 3/4	AV081730	AV082015
4.75 mm	.1870	22	70	AV081735	AV082020
3/16	.1875	7/8	2 3/4	AV081740	AV082025
-	.1885	7/8	2 3/4	AV081745	AV082030
#12	.1890	22	70	AV081750	AV082035
4.85 mm	.1909	22	70	AV081755	AV082040
#11	.1910	7/8	2 3/4	AV081760	AV082045
4.90 mm	.1929	25	76	AV081765	AV082050
#10	.1935	1	3	AV081770	AV082055
4.95 mm	.1949	25	76	AV081775	AV082060
#9	.1960	1	3	AV081780	AV082065
5.00 mm	.1969	25	76	AV081785	AV082070
5.05 mm	.1988	25	76	AV081790	AV082075
#8	.1990	1	3	AV081795	AV082080
5.10 mm	.2008	25	76	AV081800	AV082085
#7	.2010	1	3	AV081805	AV082090
5.15 mm	.2028	25	76	AV081810	AV082095
13/64	.2031	1	3	AV081815	AV082100
#6	.2040	1	3	AV081820	AV082105
5.20 mm	.2047	25	76	AV081825	AV082110
#5	.2055	1	3	AV081830	AV082115
5.25 mm	.2067	25	76	AV081835	AV082120
5.30 mm	.2087	25	76	AV081840	AV082125
#4	.2090	1	3	AV081845	AV082130
5.35 mm	.2106	25	76	AV081850	AV082135
5.40 mm	.2126	25	76	AV081855	AV082140
#3	.2130	1	3	AV081860	AV082145
5.45 mm	.2146	25	76	AV081865	AV082150
5.50 mm	.2165	25	76	AV081870	AV082155
5.55 mm	.2185	25	76	AV081875	AV082160
7/32	.2188	1	3	AV081880	AV082165
5.60 mm	.2205	25	76	AV081885	AV082170
#2	.2210	1	3	AV081890	AV082175
5.65 mm	.2224	25	76	AV081895	AV082180
5.70 mm	.2244	25	76	AV081900	AV082185
5.75 mm	.2264	25	76	AV081905	AV082190
#1	.2280	1	3	AV081910	AV082195
5.80 mm	.2283	25	76	AV081915	AV082200
5.85 mm	.2303	25	3	AV081920	AV082205
5.90 mm	.2323	25	76	AV081925	AV082210
A	.2340	1	3	AV081930	AV082215
5.95 mm	.2343	25	76	AV081935	AV082220
15/64	.2344	1	3	AV081940	AV082225
6.00 mm	.2362	25	76	AV081945	AV082230
B	.2380	1	3	AV081950	AV082235
6.10 mm	.2402	25	76	AV081955	AV082240
C	.2420	1	3	AV081960	AV082245
6.20 mm	.2441	25	76	AV081965	AV082250
D	.2460	1	3	AV081970	AV082255

SOLID CARBIDE CHUCKING REAMERS

Dia.	Dec. Equiv.	Flute Length	OAL	Tool No. Str. Helix	Tool No. R/H Helix
6.25 mm	.2461	25	76	AV082260	AV082545
6.30 mm	.2480	25	76	AV082265	AV082550
-	.2495	1	3	AV082270	AV082555
1/4	.2500	1	3	AV082275	AV082560
-	.2510	1	3	AV082280	AV082565
6.40 mm	.2520	25	76	AV082285	AV082570
6.50 mm	.2559	29	83	AV082290	AV082575
F	.2570	1 1/8	3 1/4	AV082295	AV082580
G	.2610	1 1/8	3 1/4	AV082300	AV082585
17/64	.2656	1 1/8	3 1/4	AV082305	AV082590
H	.2660	1 1/8	3 1/4	AV082310	AV082595
I	.2720	1 1/8	3 1/4	AV082315	AV082600
7.00 mm	.2756	29	83	AV082320	AV082605
J	.2770	1 1/8	3 1/4	AV082325	AV082610
K	.2810	1 1/8	3 1/4	AV082330	AV082615
9/32	.2812	1 1/8	3 1/4	AV082335	AV082620
L	.2900	1 1/8	3 1/4	AV082340	AV082625
M	.2950	1 1/8	3 1/4	AV082345	AV082630
7.50 mm	.2953	29	83	AV082350	AV082635
19/64	.2969	1 1/8	3 1/4	AV082355	AV082640
N	.3020	1 1/8	3 1/4	AV082360	AV082645
5/16	.3125	1 1/8	3 1/4	AV082365	AV082650
-	.3135	1 1/8	3 1/4	AV082370	AV082655
8.00 mm	.3150	29	83	AV082375	AV082660
O	.3160	1 1/8	3 1/4	AV082380	AV082665
P	.3230	1 1/4	3 1/2	AV082385	AV082670
21/64	.3281	1 1/4	3 1/2	AV082390	AV082675
Q	.3320	1 1/4	3 1/2	AV082395	AV082680
8.50 mm	.3346	32	89	AV082400	AV082685
R	.3390	1 1/4	3 1/2	AV082405	AV082690
11/32	.3438	1 1/4	3 1/2	AV082410	AV082695
S	.3480	1 1/4	3 1/2	AV082415	AV082700
9.00 mm	.3543	32	89	AV082420	AV082705
T	.3580	1 1/4	3 1/2	AV082425	AV082710
23/64	.3594	1 1/4	3 1/2	AV082430	AV082715
U	.3680	1 1/4	3 1/2	AV082435	AV082720
9.50 mm	.3740	32	89	AV082440	AV082725
3/8	.3750	1 1/4	3 1/2	AV082445	AV082730
-	.3760	1 1/4	3 1/2	AV082450	AV082735
V	.3770	1 1/4	3 1/2	AV082455	AV082740
W	.3860	1 1/2	4	AV082460	AV082745
25/64	.3906	1 1/2	4	AV082465	AV082750
10.00 mm	.3937	38	102	AV082470	AV082755
X	.3970	1 1/2	4	AV082475	AV082760
Y	.4040	1 1/2	4	AV082480	AV082765
13/32	.4062	1 1/2	4	AV082485	AV082770
Z	.4130	1 1/2	4	AV082490	AV082775
10.50 mm	.4134	38	102	AV082495	AV082780
27/64	.4219	1 1/2	4	AV082500	AV082785
11.00 mm	.4331	38	102	AV082505	AV082790
7/16	.4375	1 1/2	4	AV082510	AV082795
11.50 mm	.4528	38	102	AV082515	AV082800
29/64	.4531	1 1/2	4	AV082520	AV082805
15/32	.4688	1 1/2	4	AV082525	AV082810
12.00 mm	.4724	38	102	AV082530	AV082815
31/64	.4844	1 1/2	4	AV082535	AV082820
1/2	.5000	1 1/2	4	AV082540	AV082825

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Tapered Drill Reamers (Composites)



These specially designed one shot drills are used to drill precise holes in composites specifically in graphite materials. Our geometry minimizes delaminating and extends tool life. Ask about our diamond coatings to further increase tool life.



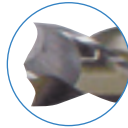
Diameter	Decimal	O.A.L.	Tool No.
3/32	.0938	4.0	AV080005
41	.0960	4.0	AV080010
40	.0980	4.0	AV080015
39	.0995	4.0	AV080020
38	.1015	4.0	AV080025
37	.104	4.0	AV080030
36	.1065	4.0	AV080035
7/64	.1094	4.0	AV080040
35	.1100	4.0	AV080045
34	.1110	4.0	AV080050
33	.1130	4.0	AV080055
32	.1160	4.0	AV080060
31	.1200	4.0	AV080065
1/8	.1250	4.0	AV080070
30	.1285	4.0	AV080075
29	.1360	4.0	AV080080
28	.1405	4.0	AV080085
9/64	.1406	4.0	AV080090
27	.1440	4.0	AV080095
26	.1470	4.0	AV080100
25	.1495	4.0	AV080105
24	.1520	4.0	AV080110
23	.1540	4.0	AV080115
5/32	.1562	4.0	AV080120
22	.1570	4.0	AV080125
21	.1590	4.0	AV080130
20	.1610	4.0	AV080135
19	.1660	4.0	AV080140
18	.1695	4.0	AV080145
11/64	.1719	4.0	AV080150
17	.1730	4.0	AV080155
16	.1770	4.0	AV080160
15	.1800	4.0	AV080165
14	.1820	4.0	AV080170
13	.1850	4.0	AV080175
3/16	.1875	4.0	AV080180
12	.1890	4.0	AV080185
11	.1910	6.0	AV080190
10	.1935	6.0	AV080195
9	.1960	6.0	AV080200
8	.1990	6.0	AV080205
7	.2010	6.0	AV080210
13/64	.2031	6.0	AV080215
6	.2040	6.0	AV080220
5	.2055	6.0	AV080225
4	.2090	6.0	AV080230
3	.2130	6.0	AV080235

Diameter	Decimal	O.A.L.	Tool No.
7/32	.2187	6.0	AV080240
2	.2210	6.0	AV080245
1	.2280	6.0	AV080250
A	.2340	6.0	AV080255
15/64	.2344	6.0	AV080260
B	.2380	6.0	AV080265
C	.2420	6.0	AV080270
D	.2460	6.0	AV080275
1/4	.2500	6.0	AV080280
F	.2570	6.0	AV080285
G	.2610	6.0	AV080290
17/64	.2656	6.0	AV080295
H	.2660	6.0	AV080300
I	.2720	6.0	AV080305
J	.2770	6.0	AV080310
K	.2810	6.0	AV080315
9/32	.2812	6.0	AV080320
L	.2900	6.0	AV080325
M	.2950	6.0	AV080330
19/64	.2969	6.0	AV080335
N	.3020	6.0	AV080340
5/16	.3125	6.0	AV080345
O	.3160	6.0	AV080350
P	.3230	6.0	AV080355
21/64	.3281	6.0	AV080360
Q	.3320	6.0	AV080365
R	.3390	6.0	AV080370
11/32	.3438	6.0	AV080375
S	.3480	6.0	AV080380
T	.3580	6.0	AV080385
23/64	.3594	6.0	AV080390
U	.3680	6.0	AV080395
3/8	.3750	6.0	AV080400
V	.3770	6.0	AV080405
W	.3860	6.0	AV080410
25/64	.3906	6.0	AV080415
X	.3970	6.0	AV080420
Y	.4040	6.0	AV080425
13/32	.4062	6.0	AV080430
Z	.4130	6.0	AV080435
27/64	.4219	6.0	AV080440
7/16	.4375	6.0	AV080445
29/64	.4531	6.0	AV080450
15/32	.4688	6.0	AV080455
31/64	.4844	6.0	AV080460
1/2	.5000	6.0	AV080465

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These Cobalt Fish Tail drills are specially designed for drilling Kevlar. Minimizes delamination and produces a clean round hole with no fuzz.



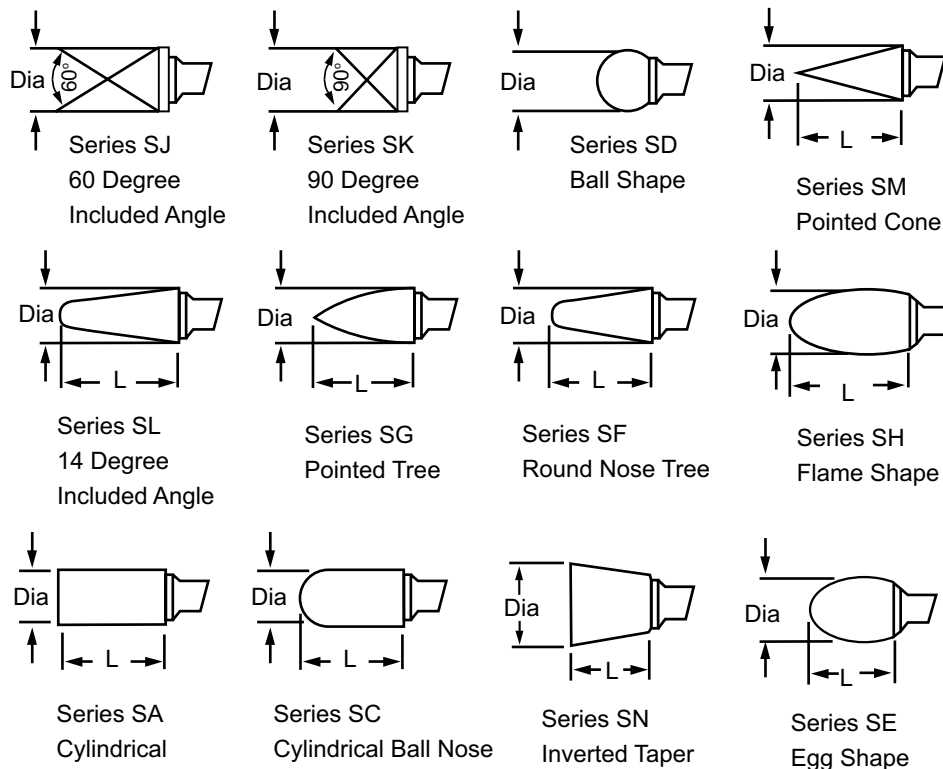
Diameter	Decimal	O.A.L.	Tool No.
3/32	.0938	2.25	AV090005
41	.0960	2.38	AV090010
40	.0980	2.38	AV090015
39	.0995	2.38	AV090020
38	.1015	2.50	AV090025
37	.104	2.50	AV090030
36	.1065	2.50	AV090035
7/64	.1094	2.62	AV090040
35	.1100	2.62	AV090045
34	.1110	2.62	AV090050
33	.1130	2.62	AV090055
32	.1160	2.75	AV090060
31	.1200	2.75	AV090065
1/8	.1250	2.75	AV090070
30	.1285	2.75	AV090075
29	.1360	2.87	AV090080
28	.1405	2.87	AV090085
9/64	.1406	2.87	AV090090
27	.1440	3.00	AV090095
26	.1470	3.00	AV090100
25	.1495	3.00	AV090105
24	.1520	3.12	AV090110
23	.1540	3.12	AV090115
5/32	.1562	3.12	AV090120
22	.1570	3.25	AV090125
21	.1590	3.25	AV090130
20	.1610	3.25	AV090135
19	.1660	3.25	AV090140
18	.1695	3.25	AV090145
11/64	.1719	3.25	AV090150
17	.1730	3.38	AV090155
16	.1770	3.38	AV090160
15	.1800	3.38	AV090165
14	.1820	3.38	AV090170
13	.1850	3.50	AV090175
3/16	.1875	3.50	AV090180
12	.1890	3.50	AV090185
11	.1910	3.50	AV090190
10	.1935	3.62	AV090195
9	.1960	3.62	AV090200
8	.1990	3.62	AV090205
7	.2010	3.62	AV090210
13/64	.2031	3.62	AV090215
6	.2040	3.75	AV090220
5	.2055	3.75	AV090225
4	.2090	3.75	AV090230
3	.2130	3.75	AV090235

Diameter	Decimal	O.A.L.	Tool No.
7/32	.2188	3.75	AV090240
2	.2210	3.88	AV090245
1	.2280	3.88	AV090250
A	.2340	3.88	AV090255
15/64	.2344	3.88	AV090260
B	.2380	4.00	AV090265
C	.2420	4.00	AV090270
D	.2460	4.00	AV090275
1/4	.2500	4.00	AV090280
F	.2570	4.12	AV090285
G	.2610	4.12	AV090290
17/64	.2656	4.12	AV090295
H	.2660	4.12	AV090300
I	.2720	4.12	AV090305
J	.2770	4.12	AV090310
K	.2810	4.25	AV090315
9/32	.2812	4.25	AV090320
L	.2900	4.25	AV090325
M	.2950	4.38	AV090330
19/64	.2969	4.38	AV090335
N	.3020	4.38	AV090340
5/16	.3125	4.50	AV090345
O	.3160	4.50	AV090350
P	.3230	4.62	AV090355
21/64	.3281	4.62	AV090360
Q	.3320	4.75	AV090365
R	.3390	4.75	AV090370
11/32	.3438	4.75	AV090375
S	.3480	4.88	AV090380
T	.3580	4.88	AV090385
23/64	.3594	4.88	AV090390
U	.3680	5.00	AV090395
3/8	.3750	5.00	AV090400
V	.3770	5.00	AV090405
W	.3860	5.12	AV090410
25/64	.3906	5.12	AV090415
X	.3970	5.12	AV090420
Y	.4040	5.25	AV090425
13/32	.4062	5.25	AV090430
Z	.4130	5.25	AV090435
27/64	.4219	5.38	AV090440
7/16	.4375	5.50	AV090445
29/64	.4531	5.62	AV090450
15/32	.4688	5.75	AV090455
31/64	.4844	5.88	AV090460
1/2	.5000	6.00	AV090465

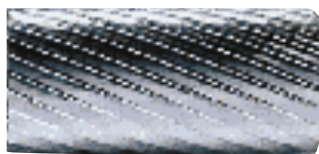
Special sizes are available upon request.

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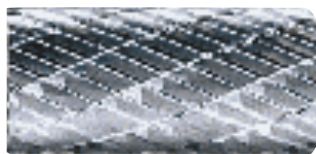
Shapes



Types of Fluting



Standard Cut
(Fine Cut Available)



Diamond Cut
(Fine Cut Available)



Hogger (Shear)



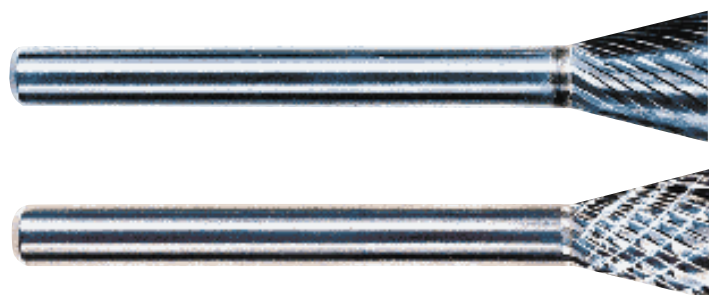
SERIES SA - CYLINDRICAL

Diameter	Cutting Length	Standard Cut	Diamond Cut	Hogger
1/8	1/2	AV070005	AV070065	AV070125
3/16	5/8	AV070010	AV070070	AV070130
1/4	5/8	AV070015	AV070075	AV070135
5/16	3/4	AV070020	AV070080	AV070140
3/8	3/4	AV070025	AV070085	AV070145
7/16	1.0	AV070030	AV070090	AV070150
1/2	1/2	AV070035	AV070095	AV070155
1/2	1.0	AV070040	AV070100	AV070160
5/8	1.0	AV070045	AV070105	AV070165
3/4	3/4	AV070050	AV070110	AV070170
3/4	1.0	AV070055	AV070115	AV070175
1.0	1.0	AV070060	AV070120	AV070180



SERIES SC - CYLINDRICAL BALL NOSE

Diameter	Cutting Length	Standard Cut	Diamond Cut	Hogger
1/8	1/2	AV070185	AV070245	AV070305
3/16	5/8	AV070190	AV070250	AV070310
1/4	5/8	AV070195	AV070255	AV070315
5/16	3/4	AV070200	AV070260	AV070320
3/8	3/4	AV070205	AV070265	AV070325
7/16	1.0	AV070210	AV070270	AV070330
1/2	1/2	AV070215	AV070275	AV070335
1/2	1.0	AV070220	AV070280	AV070340
5/8	1.0	AV070225	AV070285	AV070345
3/4	3/4	AV070230	AV070290	AV070350
3/4	1.0	AV070235	AV070295	AV070355
1.0	1.0	AV070240	AV070300	AV070360

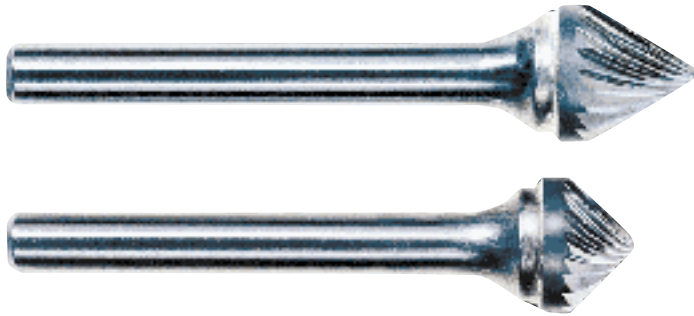


SERIES SN - INVERTED TAPER

Diameter	Cutting Length	Standard Cut	Diamond Cut
1/4	5/16	AV070365	AV070390
3/8	3/8	AV070370	AV070395
1/2	1/2	AV070375	AV070400
5/8	3/4	AV070380	AV070405
3/4	5/8	AV070385	AV070410

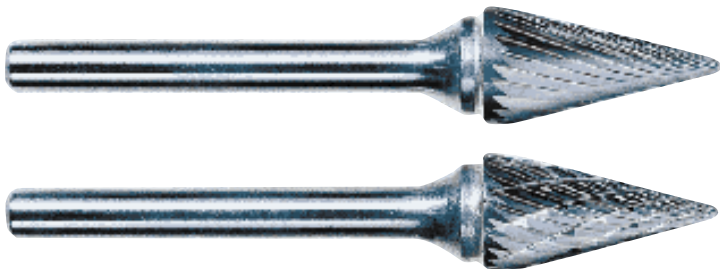
Carbide Burrs

Series SJ - Series SK - Series SM - Series SG



SERIES SJ - 60 DEGREE INCLUDED ANGLE SERIES SK - 90 DEGREE INCLUDED ANGLE

Diameter	Angle	Standard Cut	Diamond Cut
1/4	60	AV070415	AV070475
1/4	90	AV070420	AV070480
3/8	60	AV070425	AV070485
3/8	90	AV070430	AV070490
1/2	60	AV070435	AV070495
1/2	90	AV070440	AV070500
5/8	60	AV070445	AV070505
5/8	90	AV070450	AV070510
3/4	60	AV070455	AV070515
3/4	90	AV070460	AV070520
1.0	60	AV070465	AV070525
1.0	90	AV070470	AV070530



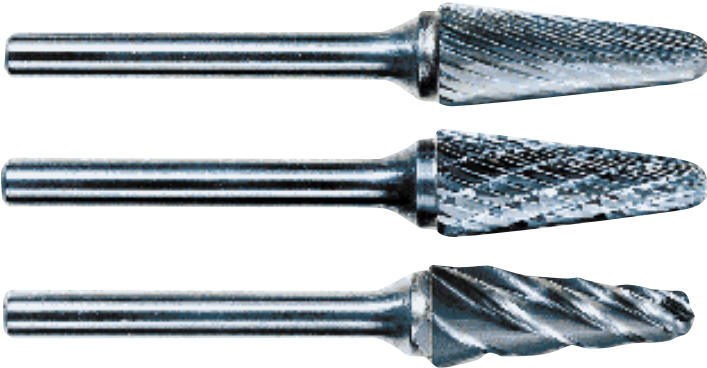
SERIES SM - POINTED CONE

Diameter	Cutting Length	Incl. Angle	Standard Cut	Diamond Cut
1/4	1/2	22	AV070535	AV070565
1/4	3/4	14	AV070540	AV070570
1/4	1.0	10	AV070545	AV070575
3/8	5/8	30	AV070550	AV070580
1/2	7/8	30	AV070555	AV070585
5/8	1.0	30	AV070560	AV070590



SERIES SG - POINTED TREE

Diameter	Cutting Length	Standard Cut	Diamond Cut
1/4	5/8	AV070595	AV070635
5/16	3/4	AV070600	AV070640
3/8	3/4	AV070605	AV070645
1/2	3/4	AV070610	AV070650
1/2	1.0	AV070615	AV070655
5/8	1.0	AV070620	AV070660
3/4	1.0	AV070625	AV070665
3/4	1.5	AV070630	AV070670



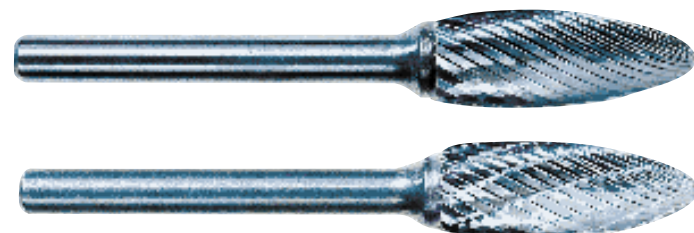
SERIES SL - 14 DEGREE INCLUDED ANGLE

Diameter	Cutting Length	Incl. Angle	Standard Cut	Diamond Cut	Hogger
1/4	5/8	14	AV070675	AV070705	AV070735
5/16	7/8	14	AV070680	AV070710	AV070740
3/8	1.06	14	AV070685	AV070715	AV070745
1/2	1.12	14	AV070690	AV070720	AV070750
5/8	1.31	14	AV070695	AV070725	AV070755
3/4	1.50	14	AV070700	AV070730	AV070760



SERIES SF - ROUND NOSE TREE

Diameter	Cutting Length	Standard Cut	Diamond Cut	Hogger
1/4	5/8	AV070765	AV070805	AV070845
3/8	3/4	AV070770	AV070810	AV070850
1/2	3/4	AV070775	AV070815	AV070855
1/2	1.0	AV070780	AV070820	AV070860
5/8	1.0	AV070785	AV070825	AV070865
3/4	1.0	AV070790	AV070830	AV070870
3/4	1.25	AV070795	AV070835	AV070875
3/4	1.50	AV070800	AV070840	AV070880

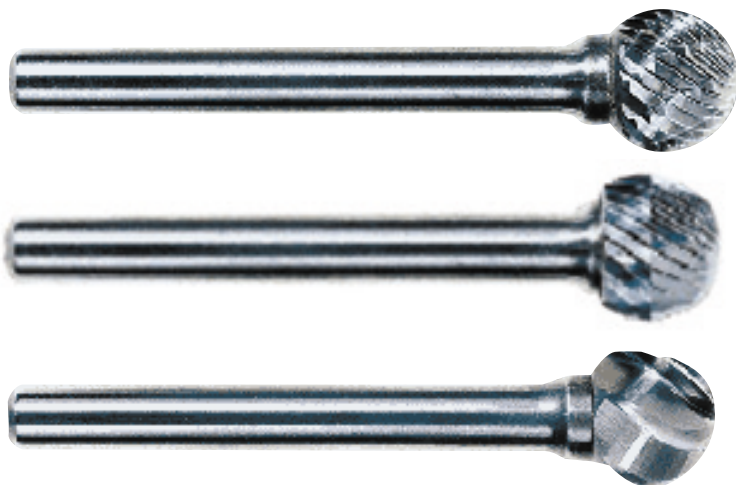


SERIES SH - FLAME SHAPE

Diameter	Cutting Length	Standard Cut	Diamond Cut	Hogger
5/16	3/4	AV070885	AV070905	AV070925
1/2	1.25	AV070890	AV070910	AV070930
5/8	1.43	AV070895	AV070915	AV070935
3/4	1.62	AV070900	AV070920	AV070940

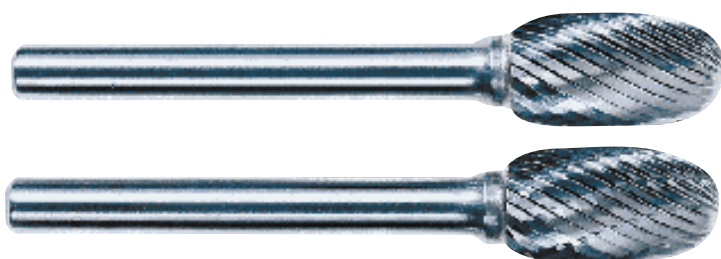
Carbide Burrs

Series SD - Series SE



SERIES SD - BALL SHAPE

Diameter	Standard Cut	Diamond Cut	Hogger
1/8	AV070945	AV070990	AV071035
3/16	AV070950	AV070995	AV071040
1/4	AV070955	AV071000	AV071045
5/16	AV070960	AV071005	AV071050
3/8	AV070965	AV071010	AV071055
1/2	AV070970	AV071015	AV071060
5/8	AV070975	AV071020	AV071065
3/4	AV070980	AV071025	AV071070
1.0	AV070985	AV071030	AV071075



SERIES SE - EGG SHAPE

Diameter	Cutting Length	Standard Cut	Diamond Cut	Hogger
1/4	3/8	AV071080	AV071105	AV071130
3/8	5/8	AV071085	AV071110	AV071135
1/2	7/8	AV071090	AV071115	AV071140
5/8	1.0	AV071095	AV071120	AV071145
3/4	1.0	AV071100	AV071125	AV071150

These types of cutting tools are made to order, but common sizes are stocked.



Routers for machining composite materials, plastic and non-ferrous materials such as Aluminum. Our router designs cover a wide variety of applications from Hand routing to N/C routing.



PCD



HSS-INTEGRAL



SOLID CARBIDE



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TIPPED



HSS-WITH HOLE

Countersinks for Graphite (PCD), Kevlar, Aluminum, Titanium and Steel You have only to provide us the material being cut, angle and diameter of hole and we will supply the optimum countersink.

Drivematic, Spacematic Nut Plate, Double Margin Drills



DRIVEMATIC, SPACEMATIC, NUT PLATE DRILLS, AND DOUBLE MARGIN DRILLS.

-HSS, Cobalt and Carbide

Producing drill countersink cutting tools for the aerospace industry for many years we have become specialized in the development of geometries for a wide range of materials. We are able to develop geometries by testing in house and can develop according to your needs as well as manufacture as per your specifications.

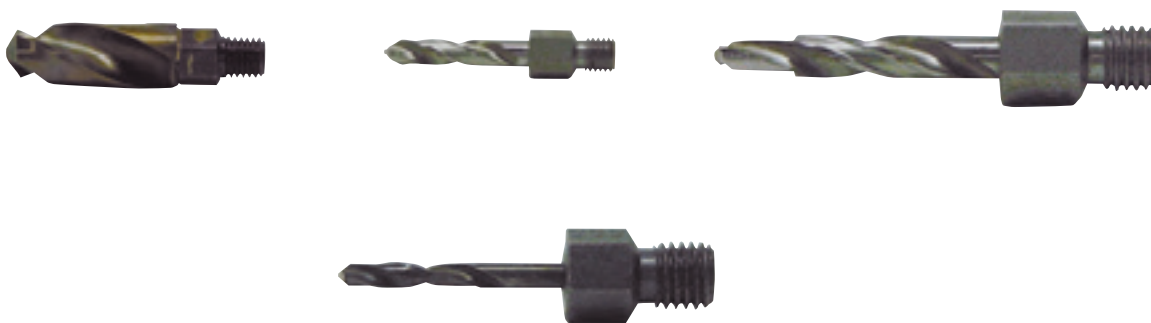
Combination Drill Countersinks- Produce holes within very close tolerances without scratching the material and without burrs.



THREADED SHANK DRILLS

Cutting tools for areas of limited access commonly used in the aerospace industry. Precision machined threads and 120 degree locating face far exceeds the requirements of NAS965 specification for threaded shank tools. These types of cutting tools are made to order, but common sizes are stocked.

THREADED SHANK TWIST DRILLS AND DOUBLE MARGIN DRILLS



THREADED SHANK REAMERS

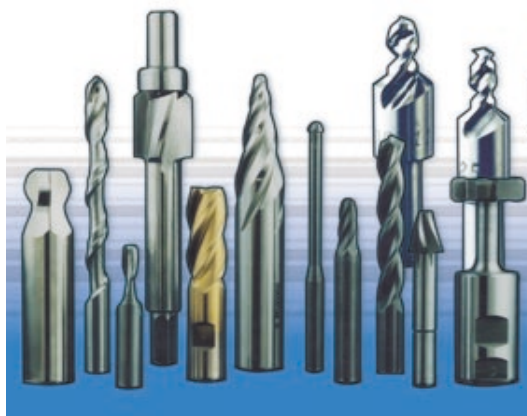
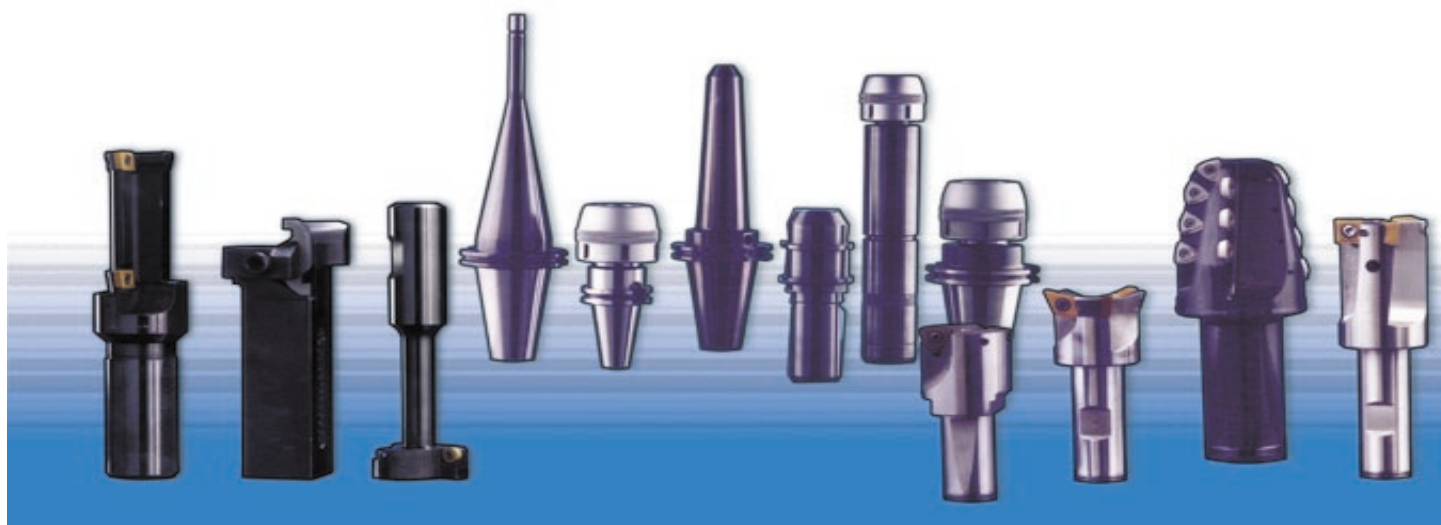


- Piloted or non piloted to suit any application.
- Available for 1/4-28 unf and 10-32 unf right angle drill motors.

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HSS, Cobalt, Powder Metallurgy, Solid Carbide, Inserted, Carbide Tipped as well as a wide variety of Adapters and Insert Tool Holders

Maintaining our reputation in the industry, specials are the back bone of our business. Today's high competitiveness in manufacturing requires more and more specials enabling companies to take full advantage of their manufacturing processes. This allows us to stay at the forefront of Metal Removal Technology. We can engineer cutting tools to suit any manufacturing requirement. From the design stage using the latest CAD software to the manufacturing stage using the latest CNC grinding Technology up to the maintenance stage for reconditioning.



Tool Size	Decimal Equivalent	Tool Size	Decimal Equivalent	Tool Size	Decimal Equivalent	Tool Size	Decimal Equivalent	Tool Size	Decimal Equivalent
80	.0135	49	.0730	4.10	.1614	6.80	.2677	27/64	.4219
0.35	.0138	1.90	.0748	4.20	.1654	6.90	.2717	11.00	.4331
79	.0145	48	.0760	19	.1660	I	.2720	7/16	.4375
1/64	.0156	1.95	.0768	4.25	.1673	7.00	.2756	11.50	.4528
0.40	.0158	5/64	.0781	4.30	.1693	J	.2770	29/64	.4531
78	.0160	47	.0785	18	.1695	7.10	.2795	15/32	.4688
0.45	.0177	2.00	.0787	11/64	.1719	K	.2810	12.00	.4724
77	.0180	2.05	.0807	17	.1730	9/32	.2812	31/64	.4844
0.50	.0197	46	.0810	4.40	.1732	7.20	.2835	12.50	.4921
76	.0200	45	.0820	16	.1770	7.25	.2854	1/2	.5000
75	.0210	2.10	.0827	4.50	.1772	7.30	.2874	13.00	.5118
0.55	.0217	2.15	.0846	15	.1800	I	.2900	33/64	.5156
74	.0225	44	.0860	4.60	.1811	7.40	.2913	17/32	.5312
0.60	.0236	2.20	.0866	14	.1820	M	.2950	13.50	.5315
73	.0240	2.25	.0886	13	.1850	7.50	.2953	35/64	.5469
72	.0250	43	.0890	4.70	.1850	19/64	.2969	14.00	.5512
0.65	.0256	2.30	.0906	4.75	.1870	7.60	.2992	9/16	.5625
71	.0260	2.35	.0925	3/16	.1875	N	.3002	14.50	.5709
0.70	.0276	42	.0935	4.80	.1890	7.70	.3031	37/64	.5781
70	.0280	3/32	.0938	12	.1890	7.75	.3051	15.00	.5906
69	.0292	2.40	.0945	11	.1910	7.80	.3071	19/32	.5938
0.75	.0295	41	.0960	4.90	.1929	7.90	.3110	39/64	.6094
68	.0310	2.45	.0965	10	.1935	5/16	.3125	15.50	.6102
1/32	.0312	40	.0980	9	.1960	8.00	.3150	5/8	.6250
0.80	.0315	2.50	.0984	5.00	.1969	O	.3160	16.00	.6299
67	.0320	39	.0995	8	.1990	8.10	.3189	41/64	.6406
66	.0330	38	.1015	5.10	.2008	8.20	.3228	16.50	.6496
0.85	.0335	2.60	.1024	7	.2010	P	.3230	21/32	.6562
65	.0350	37	.1040	13/64	.2031	8.25	.3248	17.00	.6693
0.90	.0354	2.70	.1063	6	.2040	8.30	.3265	43/64	.6719
64	.0360	36	.1065	5.20	.2047	21/64	.3281	11/16	.6875
63	.0370	2.75	.1083	5	.2055	8.40	.3307	17.50	.6890
0.95	.0374	7/64	.1094	5.25	.2067	O	.3320	45/64	.7031
62	.0380	35	.1100	5.30	.2087	8.50	.3346	18.00	.7087
61	.0390	2.80	.1102	4	.2090	8.60	.3386	23/32	.7188
1.00	.0394	34	.110	5.40	.2126	R	.3390	18.50	.7283
60	.0400	33	.130	3	.2130	8.70	.3425	47/64	.7344
59	.0410	2.90	.142	5.50	.2165	11/32	.3438	19.00	.7480
1.05	.0413	32	.160	7/32	.2188	8.75	.3445	3/4	.7500
58	.0420	3.00	.181	5.60	.2205	8.80	.3465	49/64	.7656
57	.0430	31	.1200	2	.2210	S	.3480	19.50	.7677
1.10	.0433	3.10	.1220	5.70	.2244	8.90	.3504	25/32	.7812
1.15	.0453	1/8	.1250	5.75	.2264	9.00	.3543	20.00	.7874
56	.0465	3.20	.1260	1	.2280	T	.3580	51/64	.7969
3/64	.0469	3.25	.1280	5.80	.2283	9.10	.3583	20.50	.8071
1.20	.0472	30	.1285	5.90	.2323	23/64	.3594	13/16	.8125
1.25	.0492	3.30	.1299	A	.2340	9.20	.3622	21.00	.8268
1.30	.0512	3.40	.1339	15/64	.2344	9.25	.3642	53/64	.8281
55	.0520	29	.1360	6.00	.2362	9.30	.3661	27/32	.8438
1.35	.0531	3.50	.1378	B	.2380	U	.3680	21.50	.8465
54	.0550	28	.1405	6.10	.2402	9.40	.3701	55/64	.8594
1.40	.0551	9/64	.1406	C	.2420	9.50	.3740	22.00	.8661
1.45	.0571	3.60	.1417	6.20	.2441	3/8	.3750	7/8	.8750
1.50	.0591	27	.1440	D	.2460	V	.3770	22.50	.8858
53	.0595	3.70	.1457	6.25	.2461	9.60	.3780	57/64	.8906
1.55	.0610	26	.1470	6.30	.2480	9.70	.3819	23.00	.9055
1/16	.0625	3.75	.1476	1/4	.2500	9.75	.3839	29/32	.9062
1.60	.0630	25	.1495	E	.2500	9.80	.3858	59/64	.9219
52	.0635	3.80	.1496	6.40	.2520	W	.3860	23.50	.9252
1.65	.0650	24	.1520	6.50	.2559	9.90	.3898	15/16	.9375
1.70	.0669	3.90	.1535	F	.2570	25/64	.3906	24.00	.9449
51	.0670	23	.1540	6.60	.2598	10.00	.3937	61/64	.9531
1.75	.0689	5/32	.1562	G	.2610	X	.3970	24.50	.9646
50	.0700	22	.1570	6.70	.2638	Y	.4040	31/32	.9688
1.80	.0709	4.00	.1575	17/64	.2656	13/32	.4062	25.00	.9843
1.85	.0728	21	.1590	6.75	.2657	Z	.4130	63/64	.9844
		20	.1610	H	.2660	10.50	.4134	1	1.000

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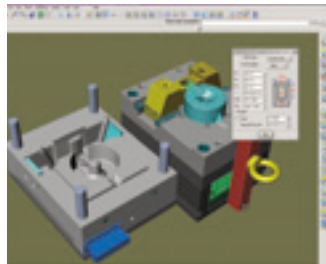
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