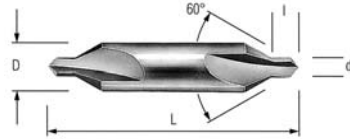


CUTTING TOOLS

Centre drills—Solid Carbide

Combined Countersink Centre Drills are produced to the highest standards of finish and tolerance. Although the prime function of the tool is to provide hole centring, the 60° cutting face provides a useful tool for hole chamfering. They resist deflection and provide positional accuracy. Ideal for machining hard or exotic materials.

• series 214 - centre drills



METRIC SIZES

'd' dia (mm)	'D' dia (mm)	'L' length (mm)	'l' length (mm)	Part Number
1.6	4.0	35.5	2.4	AG03941
2.0	5.0	40.0	2.9	AG03942
2.5	6.3	45.0	3.6	AG03943
3.15	8.0	50.0	4.4	AG03944
4.0	10.0	56.0	5.6	AG03945
5.0	12.5	63.0	6.9	AG03946

IMPERIAL SIZES

'd' dia (mm)	'D' dia (mm)	'L' length (mm)	'l' length (mm)	Part Number	Equip BS Ref.	U.S. Std. No.
3/64	1/8	1 1/4	5/64	AG03947	BS1	1
5/64	3/16	1 7/8	7/64	AG03948		2
7/64	1/4	2	5/32	AG03949		3
1/8	5/16	2 3/8	11/64	AG03950	BS4	4
3/16	7/16	2 3/4	1/4	AG03951		5
7/32	1/2	3	19/64	AG03952	BS6	6
1/4	5/8	3 1/4	11/32	AG03953		7

Countersinks

Countersinks are available with 60° and 90° included angles. Single flute, although it can be used on hardened steel, is recommended primarily for softer non-metallic and non-ferrous materials. The multi-flute version is ideal for hardened steel, high temperature alloys and other tough materials.

Rigid set-up and good machine tool maintenance are vital to reduce the possibility of cutting edge damage.

- series 241 - single flute 60° incl. angle
- series 242 - single flute 90° incl. angle
- series 243 - multi flute 60° incl. angle
- series 244 - multi flute 90° incl. angle



IMPERIAL SIZES

Head dia (ins)	Shank dia (ins)	Part Number	
		series 241 single-60°	series 242 single-90°
1/4	1/4	AG03964	AG03968
3/8	1/4	AG03965	AG03969
1/2	1/4	AG03966	AG03970
3/4	1/2	AG03967	AG03971

IMPERIAL SIZES

Head dia (ins)	Shank dia (ins)	Part Number	
		series 243 multi-60°	series 244 multi-90°
1/4	1/4	AG03972	AG03977
3/8	1/4	AG03973	AG03978
1/2	1/4	AG03974	AG03979
5/8	3/8	AG03975	AG03980
3/4	1/2	AG03976	AG03981

Ground Rod - - - Solid Carbide

The following tables indicate the STOCK SIZES of GROUND LENGTHS of TUNGSTEN CARBIDE ROD. On many occasions toolmakers, engravers, etc., prefer to produce cutting tools to their own design, and the following stock list is provided for their use.

- series 200 - metric
- series 201 - imperial



METRIC STOCK SIZES

Head dia (ins)	Shank dia (ins)	Part Number
3	38	AG04167
3	45	AG04168
3	63	AG04169
4	50	AG04170
5	50	AG04171
6	50	AG04172
6	63	AG04173
6	75	AG04174
8	63	AG04175
10	70	AG04176
11	70	AG04177
12	75	AG04178
14	88	AG04179
16	88	AG04180
18	100	AG04181
20	100	AG04182
25	100	AG04183

IMPERIAL STOCK SIZES

Head dia (ins)	Shank dia (ins)	Part Number
3/32	1 3/4	AG04184
3/32	2 1/2	AG04185
1/8	1 1/2	AG04186
1/8	1 3/4	AG04187
1/8	2 1/2	AG04188
3/16	2	AG04189
1/4	2	AG04190
1/4	2 1/2	AG04191
1/4	3	AG04192
5/16	2 1/2	AG04193
3/8	2 1/2	AG04194
7/16	2 3/4	AG04195
1/2	3	AG04196
9/16	3 1/2	AG04197
5/8	3 1/2	AG04198
3/4	4	AG04199
1	4	AG04200

Diameter Tolerances +0.000mm/-0.013mm
(All lengths nominal)

Diameter Tolerances +0.000"/-0.00005"
(All lengths nominal)

Reamers—Solid Carbide

Solid Carbide Reamers give an excellent surface finish. The rigidity of the carbide enables consistent size and position to be maintained on long production runs. The problems incurred when using conventional reamers on exotic materials are eliminated by the use of solid carbide. Garryson Carbide Reamers can also be used successfully on materials having a hardness above 40Rc. For the best results it is essential that the reamer is made to work. Too little stock left in the hole will cause the reamer to rub and scrape, resulting in premature tool failure.

• series 220 - 40° straight flute right hand cutting



METRIC SIZES

Cutter dia (mm)	Shank dia (mm)	Flute length (mm)	Overall length (mm)	No. of flutes	Part Number
1.5	1.17	9.5	38.0	4	AG03982
2	1.85	12.7	44.4	4	AG03983
2.5	2.44	15.9	57.1	4	AG03984
3	2.84	15.9	57.1	4	AG03985
3.5	3.43	19.1	63.5	4	AG03986
4	3.84	19.1	63.5	4	AG03987
4.5	4.42	22.2	69.9	4	AG03988
5	4.83	25.4	76.2	4	AG03989
6	5.82	25.4	76.2	4	AG03990
7	6.86	28.6	82.6	6	AG03991
8	7.65	28.6	82.6	6	AG03992
9	8.84	31.8	88.9	6	AG03993
10	9.65	31.8	88.9	6	AG03994

Standard Tolerances

1/4" diameter and smaller +0.0001" to +0.0004"
Over 1/4" diameter +0.0001" to +0.0005"

IMPERIAL SIZES

Cutter dia (ins)	Shank dia (ins)	Flute length (ins)	Overall length (ins)	No. of flutes	Part Number
3/64	.043	3/8	1 1/2	4	AG03995
1/16	.058	3/8	1 1/2	4	AG03996
5/64	.073	1/2	1 3/4	4	AG03997
3/32	.088	1/2	2	4	AG03998
7/64	.104	5/8	2 1/4	4	AG03999
1/8	.120	5/8	2 1/4	4	AG04000
9/64	.135	3/4	2 1/2	4	AG04001
5/32	.151	3/4	2 1/2	4	AG04002
11/64	.166	7/8	2 3/4	4	AG04003
3/16	.182	7/8	2 3/4	4	AG04004
13/64	.198	1	3	4	AG04005
7/32	.213	1	3	4	AG04006
15/64	.229	1	3	4	AG04007
1/4	.244	1	3	4	AG04008
17/64	.252	1 1/8	3 1/4	6	AG04009
9/32	.270	1 1/8	3 1/4	6	AG04010
19/64	.252	1 1/8	3 1/4	6	AG04011
5/16	.301	1 1/8	3 1/4	6	AG04012
21/64	.217	1 1/4	3 1/2	6	AG04013
11/32	.332	1 1/4	3 1/2	6	AG04014
23/64	.348	1 1/4	3 1/2	6	AG04015
3/8	.363	1 1/4	3 1/2	6	AG04016
7/16	.410	1 3/8	3 3/4	6	AG04017
1/2	.470	1 1/2	4	6	AG04018

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CUTTING TOOLS

OTHER DIAMETERS - OTHER LENGTHS

OPTION (1) - All above listed diameters with alternative overall lengths -
Delivery - 2-3 days. Prices on application.

OPTION (2) - Any diameter (up to 25mm or 1"), any length (up to max. 300mm or 12") -
Price and delivery on application; subject to quantity.

Conversion Chart—Solid Carbide

Decimal (mm)	Sizes	Decimal (ins)	Decimal (mm)	Sizes	Decimal (ins)	Decimal (mm)	Sizes	Decimal (ins)	Decimal (mm)	Sizes	Decimal (ins)	Decimal (mm)	Sizes	Decimal (ins)
.794	1/32	.0132	2.383	3/32	.0938	4.700	13	.1850	7.366	L	.2900	12.000		.4724
.800		.0315	2.400		.0945	4.750		.1870	7.400		.2913	12.304	31/64	.4844
.813	67	.0320	2.438	41	.0960	4.763	3/16	.1875	7.493	M	.2950	12.500		.4921
.838	66	.0330	2.450		.0965	4.800	12	.1890	7.500		.2953	12.700	1/2	.5000
.851		.0335	2.489	40	.0980	4.850	11	.1910	7.541	19/64	.2969	13.000		.5118
.889	65	.0350	2.500		.0984	4.900		.1929	7.600		.2992	13.096	33/64	.5156
.900		.0354	2.527	39	.0995	4.915	10	.1935	7.671	N	.3020	13.492	17/32	.5312
.914	64	.0360	2.578	38	.1015	4.978	9	.1960	7.700		.3031	13.500		.5315
.940	63	.0370	2.600		.1024	5.000		.1969	7.750		.3051	13.891	35/64	.5469
.950		.0374	2.642	37	.1040	5.055	8	.1990	7.800		.3071	14.000		.5512
.965	62	.0380	2.700		.1063	5.100		.2008	7.900		.3110	14.287	9/16	.5625
.991	61	.0390	2.705	36	.1065	5.105	7	.2010	7.938	5/16	.3125	14.500		.5709
1.000		.0394	2.750		.1083	5.159	13/64	.2031	8.000		.3150	14.684	37/64	.5781
1.016	60	.0400	2.779	7/64	.1094	5.182	6	.2040	8.026	O	.3160	15.000		.5906
1.041	59	.0410	2.794	35	.1100	5.200		.2047	8.100		.3189	15.083	19/32	.5938
1.049		.0413	2.800		.1102	5.220	5	.2055	8.200		.3228	15.479	39/64	.6094
1.067	58	.0420	2.819	34	.1110	5.250		.2067	8.204	P	.3230	15.500		.6102
1.092	57	.0430	2.870	33	.1130	5.300		.2087	8.250		.3248	15.875	5/8	.6250
1.100		.0433	2.900		.1142	5.309	4	.2090	8.300		.3268	16.000		.6299
1.151		.0453	2.946	32	.1160	5.400		.2126	8.334	21/64	.3281	16.271	41/64	.6406
1.181	56	.0465	3.000		.1181	5.410	3	.2130	8.400		.3307	16.500		.6496
1.191	3/64	.0469	3.048	31	.1200	5.500		.2165	8.433	Q	.3320	16.667	21/32	.6562
1.200		.0472	3.100		.1220	5.558	7/32	.2188	8.500		.3346	17.000		.6693
1.250		.0492	3.175	1/8	.1250	5.600		.2205	8.600		.3386	17.066	43/64	.6719
1.300		.0512	3.200		.1260	5.613	2	.2210	8.611	R	.3390	17.463	11/16	.6875
1.321	55	.0520	3.250		.1280	5.700		.2244	8.700		.3425	17.500		.6890
1.349		.0531	3.264	30	.1285	5.750		.2264	8.733	11/32	.3438	17.859	45/64	.7031
1.397	54	.0550	3.300		.1299	5.791	1	.2280	8.750		.3445	18.000		.7087
1.400		.0551	3.400		.1339	5.800		.2283	8.800		.3465	18.258	23/32	.7188
1.450		.0571	3.454	29	.1360	5.900		.2323	8.839	S	.3480	18.5000		.7283
1.500		.0591	3.500		.1378	5.944	A	.2340	8.900		.3504	18.654	47/64	.7344
1.511	53	.0595	3.569	28	.1405	5.954	15/64	.2344	9.000		.3543	19.000		.7480
1.550		.0610	3.571	9/64	.1406	6.000		.2362	9.093	T	.3580	19.050	3/4	.7500
1.588	1/16	.0625	3.600		.1417	6.045	B	.2380	9.100		.3583	19.446	49/64	.7656
1.600		.0630	3.658	27	.1440	6.100		.2402	9.125	23/64	.3594	19.500		.7677
1.613	52	.0635	3.700		.1457	6.147	C	.2420	9.200		.3622	19.842	25/32	.7812
1.650		.0650	3.734	26	.1470	6.200		.2441	9.250		.3642	20.000		.7874
1.700		.0669	3.750		.1476	6.248	D	.2460	9.300		.3661	20.241	51/64	.7969
1.702	51	.0670	3.797	25	.1495	6.250		.2461	9.347	U	.3680	20.500		.8071
1.750		.0689	3.800		.1496	6.300		.2480	9.400		.3701	20.638	13/16	.8125
1.778	50	.0700	3.861	24	.1520	6.350	E	.2500	9.500		.3740	21.000		.8268
1.800		.0709	3.900		.1536	6.350	1/4	.2500	9.525	3/8	.3750	21.034	53/64	.8281
1.850		.0728	3.912	23	.1540	6.400		.2520	9.576	V	.3770	21.433	27/32	.8438
1.854	49	.0730	3.962	5/32	.1562	6.500		.2559	9.600		.3780	21.500		.8465
1.900		.0748	3.988	22	.1570	6.528	F	.2570	9.700		.3819	21.829	55/64	.8594
1.930	48	.0760	4.000		.1575	6.600		.2598	9.750		.3839	22.000		.8661
1.950		.0768	4.039	21	.1590	6.629	G	.2610	9.800		.3858	22.225	7/8	.8750
1.984	5/64	.0781	4.089	20	.1610	6.700		.2638	9.804	W	.3860	22.500		.8858
1.994	47	.0785	4.100		.1614	6.746	17/64	.2656	9.900		.3898	22.261	57/64	.8906
2.000		.0787	4.200		.1654	6.750		.2657	9.921	25/64	.3906	23.000		.9055
2.050		.0807	4.216	19	.1660	6.756	H	.2660	10.000		.3937	23.000		.9055
2.057	46	.0810	4.250		.1673	6.800		.2677	10.084	X	.3970	23.017	29/32	.9062
2.083	45	.0820	4.300		.1693	6.900		.2717	10.262	Y	.4040	23.416	59/64	.9219
2.100		.0827	4.305	18	.1695	6.909	I	.2720	10.317	13/32	.4062	23.500		.9252
2.150		.0846	4.366	11/64	.1719	7.000		.2756	10.490	Z	.4130	23.813	15/16	.9375
2.184	44	.0860	4.394	17	.1730	7.036	J	.2770	10.500		.4134	24.000		.9449
2.200		.0866	4.400		.1732	7.100		.2795	10.716	27/64	.4219	24.209	61/64	.9531
2.250		.0886	4.496	16	.1770	7.137	K	.2810	11.000		.4331	24.500		.9646
2.260	43	.0890	4.500		.1772	7.142	9/32	.2812	11.113	7/16	.4375	24.608	31/2	.9688
2.300		.0906	4.572	15	.1800	7.200		.2835	11.500		.4528	25.000		.9843
2.350		.0925	4.600		.1811	7.250		.2854	11.509	29/64	.4531	25.004	63/64	.9844
2.375	42	.0935	4.623	14	.1820	7.300		.2874	11.908	15/32	.4688	25.400		1.000

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