

Feed Rate Chart

Alpha Code	Feed in Inches per Revolution (IPR) ± 25%															Ø Diameter				
	1mm/ 1/32"	2mm/ 3/32"	3mm/ 1/8"	4mm/ 5/32"	5mm/ 3/16"	6mm/ 1/4"	8mm/ 5/16"	10mm/ 3/8"	12mm/ 1/2"	15mm/ 9/16"	16mm/ 5/8"	20mm/ 3/4"	25mm/ 1"	30mm/ 1.1/8"	40mm/ 1.5/8"	50mm/ 2"				
A	0.0004	0.0009	0.0011	0.0013	0.0014	0.0017	0.0021	0.0024	0.0027	0.0032	0.0034	0.0043	0.0049	0.0053	0.0061	0.0069				
B	0.0006	0.0011	0.0015	0.0016	0.0018	0.0021	0.0026	0.0031	0.0035	0.0041	0.0043	0.0053	0.0060	0.0065	0.0074	0.0082				
C	0.0006	0.0013	0.0017	0.0020	0.0022	0.0025	0.0031	0.0039	0.0043	0.0049	0.0051	0.0063	0.0071	0.0077	0.0087	0.0094				
D	0.0006	0.0015	0.0021	0.0024	0.0027	0.0031	0.0039	0.0047	0.0051	0.0059	0.0061	0.0074	0.0083	0.0090	0.0100	0.0108				
E	0.0007	0.0017	0.0024	0.0028	0.0031	0.0037	0.0045	0.0055	0.0059	0.0068	0.0071	0.0085	0.0094	0.0102	0.0112	0.0122				
F	0.0007	0.0020	0.0029	0.0033	0.0037	0.0043	0.0054	0.0065	0.0070	0.0080	0.0083	0.0098	0.0108	0.0116	0.0126	0.0135				
G	0.0007	0.0022	0.0033	0.0038	0.0043	0.0050	0.0063	0.0075	0.0081	0.0091	0.0094	0.0110	0.0122	0.0130	0.0140	0.0148				
H	0.0008	0.0026	0.0040	0.0046	0.0051	0.0059	0.0075	0.0090	0.0096	0.0107	0.0110	0.0126	0.0140	0.0148	0.0157	0.0165				
I	0.0008	0.0030	0.0047	0.0053	0.0059	0.0068	0.0087	0.0104	0.0110	0.0122	0.0126	0.0142	0.0157	0.0165	0.0173	0.0181				
J	0.0009	0.0033	0.0053	0.0060	0.0067	0.0078	0.0098	0.0117	0.0124	0.0137	0.0142	0.0159	0.0175	0.0183	0.0191	0.0198				
K	0.0010	0.0036	0.0059	0.0067	0.0075	0.0087	0.0110	0.0130	0.0138	0.0153	0.0157	0.0177	0.0193	0.0201	0.0209	0.0215				
L	0.0011	0.0040	0.0065	0.0073	0.0082	0.0094	0.0120	0.0142	0.0152	0.0165	0.0169	0.0191	0.0207	0.0215	0.0224	0.0231				
M	0.0012	0.0043	0.0071	0.0080	0.0089	0.0102	0.0130	0.0154	0.0165	0.0177	0.0181	0.0205	0.0220	0.0228	0.0238	0.0248				
N	0.0013	0.0047	0.0077	0.0086	0.0095	0.0110	0.0140	0.0165	0.0179	0.0189	0.0193	0.0219	0.0234	0.0242	0.0253	0.0265				
S	0.0003	0.0006	0.0008	0.0010	0.0012	0.0015	0.0020	0.0031	0.0039	0.0048	0.0051	0.0059	0.0070	0.0070	0.0090					
T	0.0006	0.0011	0.0016	0.0020	0.0024	0.0028	0.0035	0.0043	0.0051	0.0063	0.0067	0.0075	0.0080	0.0090	0.0100					
U	0.0010	0.0019	0.0028	0.0031	0.0035	0.0042	0.0055	0.0067	0.0079	0.0088	0.0091	0.0094	0.0110	0.0120	0.0140					
V	0.0015	0.0027	0.0039	0.0045	0.0051	0.0060	0.0079	0.0098	0.0110	0.0122	0.0126	0.0134	0.0160	0.0170	0.0200					
W	0.0019	0.0035	0.0051	0.0059	0.0067	0.0079	0.0102	0.0130	0.0150	0.0165	0.0169	0.0177	0.0190	0.0190	0.0200					
X	0.0022	0.0041	0.0059	0.0071	0.0083	0.0098	0.0130	0.0165	0.0189	0.0210	0.0217	0.0228								
Y	0.0027	0.0049	0.0071	0.0087	0.0102	0.0125	0.0169	0.0217	0.0276	0.0276	0.0276	0.0291								
Z	0.0037	0.0068	0.0098	0.0128	0.0157	0.0210	0.0315	0.0394	0.0433	0.0463	0.0472	0.0472								

How To Use This Chart to Find Cutting Feed Rate (IPR):

1. Find your Alpha Code on the AMG Chart (example: 279 U : U is the Alpha Code)
2. Find the closest diameter for your cutting application on the chart to find your IPR

Application Material Groups (AMG)		Hardness HRC	ISO
1. Steel	1.1 Magnetic soft steel	12L14, 12L15	<120 HB P 1
	1.2 Structural Steel/ case carburising steel	1005-1025, 1214, 1215, A36	<200 HB P 1
	1.3 Plain Carbon steel	1030-1060, 1050-1060, 1144-1146	<24 P 2
	1.4 Alloy steel	4140,4340,52100,8620 H11-H41,A2,D2,01,P20,420	<24 P 3
	1.5 Alloy steel/ Hardened and tempered steel	4140,4340,52100,8620 H11-H41,A2,D2,01,P20,420	>24<38 P 4
	1.6 Alloy steel/ Hardened and tempered steel	4140,4340,52100,8620 H11-H41,A2,D2,01,P20,420	>38 H 1
	1.7 Alloy steel Hardened	A2-D2, H10-H41, L1-L6, M1-M42, T1	49-55 H 3
	1.8 Alloy steel Hardened	A2-D2, H10-H41, L1-L6, M1-M42, T1	55-63 H 4
2. Stainless Steel	2.1 Free machining Stainless Steel	200, 303, 416, 420F, 430F, 440	<24 M 1
	2.2 Austenitic	301, 302, 304, 316, 321, 330, CUSTOM 455, AM-350	<24 M 3
	2.3 Ferritic + Austenitic, Martensitic	318-329, 400-446, DUPLEX	<32 M 2
	2.4 Precipitation Hardened	15-5PH, Custom 450 17-4PH	<32 S 2
3. Cast Iron	3.1 Lamellar graphite	Grey, G10, Gg40, J431C, A48 CLASS 20	<150 HB K 1
	3.2 Lamellar graphite	Grey, GG25-Gg40, J158, A48 CLASS 40-60	>150 HB<32 K 2
	3.3 Nodular graphite/ Malleable Cast Iron	A220, A436, A439, A602, Black, GGG40-GGG70	<200 HB K 3
	3.4 Nodular graphite/ Malleable Cast Iron	Black Gts/Gtw, J434C	>200 HB<32 K 4
4. Titanium	4.1 Titanium, unalloyed	Commercially Pure	<200 HB S 1
	4.2 Titanium, alloyed	6Al4V, 6A14V-2Sn, Monel, Monel K	<28 S 2
	4.3 Titanium, alloyed	6Al4V-4Mo, 7A14V-4Mo, 4911-4967	>28<38 S 3
5. Nickel	5.1 Nickel, unalloyed	Commercially Pure, 17644, 200, 5553	<150 HB S 1
	5.2 Nickel, alloyed	Monel 400, Hastelloy C, Inconel 625, Waspaloy	<28 S 2
	5.3 Nickel, alloyed	Inconel 718, Nimonic 75-95, Rene 41, Inconel 825, A286	>28<38 S 3
6. Copper	6.1 Copper	Commercially Pure	<100 HB N 3
	6.2 β-Brass, Bronze	314-340, 350-370	<200 HB N 4
	6.3 α-Brass	Alloyed Cu + Al + Fe, Long Chipping	<200 HB N 3
	6.4 High Strength Bronze	Ampco 18-25	<49 N 4
7. Aluminium Magnesium	7.1 Al, Mg, unalloyed	Commercially Pure	<100 HB N 1
	7.2 Al alloyed, Si<0.5%	6061 T6, 7075, 314-340	<150 HB N 1
	7.3 Al alloyed, Si>0.5%<10%	6061 T6, 380-390	<120 HB N 1
	7.4 Al alloyed, Si>10% Mg alloys	Magnesium Whisker Reinforced	<120 HB N 2
8. Synthetic Materials	8.1 Thermoplastics	Ultradim, Polystrol	---
	8.2 Thermosetting plastics	Bakelit, Pertinax	---
	8.3 Reinforced plastic materials	CFK, GFKAFK	---
9. Hard Mat.	9.1 Cermets (Metal-ceramics)	Ferrotic	<54 H
10. Graphite	10.1 Standard graphite	---	O



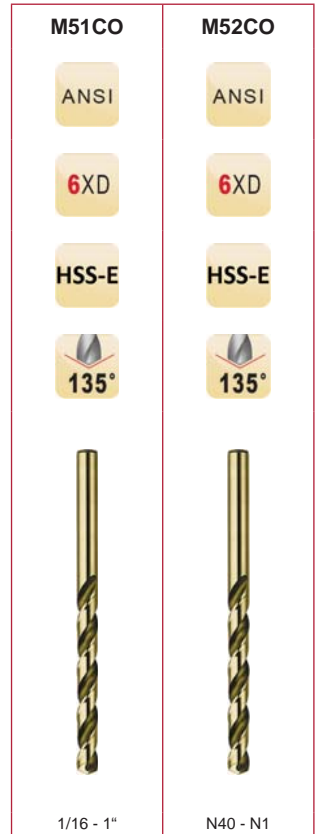
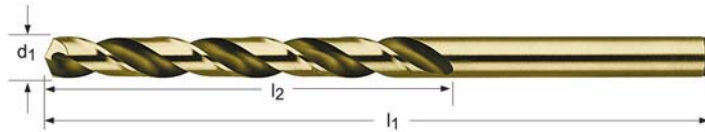
COBALT TAPER LENGTH DRILL

Heavy Duty Taper Length

M51CO - Fractional Sizes

M52CO - Wire Gauge Sizes

Low thrust design Heavy Duty self centering Split Point for easier penetration. Cobalt base material with Bronze Oxide for wear resistance and lubricity.



d_1 Ø Inch	d_1 Ø Nr.	d_1 decimal Inch	l_2 Inch	l_1 Inch	Pack Qty	M51CO	M52CO
1/16		0.0625	1.3/4	3"	12	051304	—
5/64		0.0781	2"	3.3/4	12	051305	—
3/32		0.0938	2.1/4	4.1/4	12	051306	—
	40	0.0980	2.1/2	4.5/8	12	—	052340
	39	0.0995	2.1/2	4.5/8	12	—	052339
	36	0.1065	2.1/2	4.5/8	12	—	052336
7/64		0.1094	2.1/2	4.5/8	12	051307	—
	35	0.1100	2.3/4	5.1/8	12	—	052335
	34	0.1110	2.3/4	5.1/8	12	—	052334
	33	0.1130	2.3/4	5.1/8	12	—	052333
	32	0.1160	2.3/4	5.1/8	12	—	052332
	31	0.1200	2.3/4	5.1/8	12	—	052331
1/8		0.1250	2.3/4	5.1/8	12	051308	—
	30	0.1285	3"	5.3/8	12	—	052330
	29	0.1360	3"	5.3/8	12	—	052329
	28	0.1405	3"	5.3/8	12	—	052328
9/64		0.1406	3"	5.3/8	12	051309	—
	27	0.1440	3"	5.3/8	12	—	052327
	26	0.1470	3"	5.3/8	12	—	052326
	25	0.1495	3"	5.3/8	12	—	052325
	24	0.1520	3"	5.3/8	12	—	052324
5/32		0.1563	3"	5.3/8	12	051310	—
	22	0.1570	3.3/8	5.3/4	12	—	052322
	21	0.1590	3.3/8	5.3/4	12	—	052321
	20	0.1610	3.3/8	5.3/4	12	—	052320
	19	0.1660	3.3/8	5.3/4	12	—	052319
	18	0.1695	3.3/8	5.3/4	12	—	052318
11/64		0.1719	3.3/8	5.3/4	12	051311	—
	17	0.1730	3.3/8	5.3/4	12	—	052317
	16	0.1770	3.3/8	5.3/4	12	—	052316
	15	0.1800	3.3/8	5.3/4	12	—	052315
	14	0.1820	3.3/8	5.3/4	12	—	052314

COBALT TAPER LENGTH DRILL



d ₁ Ø Inch	d ₁ Ø Nr.	d ₁ decimal Inch	l ₂ Inch	l ₁ Inch	Pack Qty	M51CO	M52CO
	13	0.1850	3.3/8	5.3/4	12	—	052313
3/16		0.1875	3.3/8	5.3/4	12	051312	—
	12	0.1890	3.5/8	6"	12	—	052312
	11	0.1910	3.5/8	6"	12	—	052311
	10	0.1935	3.5/8	6"	12	—	052310
	9	0.1960	3.5/8	6"	12	—	052309
	8	0.1990	3.5/8	6"	12	—	052308
	7	0.2010	3.5/8	6"	12	—	052307
13/64		0.2031	3.5/8	6"	12	051313	—
	5	0.2055	3.5/8	6"	12	—	052305
	4	0.2090	3.5/8	6"	12	—	052304
	3	0.2130	3.5/8	6"	12	—	052303
7/32		0.2188	3.5/8	6"	12	051314	—
	2	0.2210	3.3/4	6.1/8	12	—	052302
	1	0.2280	3.3/4	6.1/8	12	—	052301
15/64		0.2344	3.3/4	6.1/8	12	051315	—
1/4		0.2500	3.3/4	6.1/8	12	051316	—
17/64		0.2656	3.7/8	6.1/4	6	051317	—
9/32		0.2813	3.7/8	6.1/4	6	051318	—
19/64		0.2969	4"	6.3/8	6	051319	—
5/16		0.3125	4"	6.3/8	6	051320	—
21/64		0.3281	4.1/8	6.1/2	6	051321	—
11/32		0.3437	4.1/8	6.1/2	6	051322	—
23/64		0.3594	4.1/4	6.3/4	6	051323	—
3/8		0.3750	4.1/4	6.3/4	6	051324	—
25/64		0.3906	4.3/8	7"	6	051325	—
13/32		0.4063	4.3/8	7"	6	051326	—
27/64		0.4219	4.5/8	7.1/4	6	051327	—
7/16		0.4375	4.5/8	7.1/4	6	051328	—
29/64		0.4531	4.3/4	7.1/2	6	051329	—
15/32		0.4687	4.3/4	7.1/2	6	051330	—
31/64		0.4844	4.3/4	7.3/4	6	051331	—
1/2		0.5000	4.3/4	7.3/4	6	051332	—
33/64		0.5156	4.3/4	8"	1	051333	¹⁾ —
17/32		0.5313	4.3/4	8"	1	051334	¹⁾ —
35/64		0.5469	4.7/8	8.1/4	1	051335	¹⁾ —
9/16		0.5625	4.7/8	8.1/4	1	051336	¹⁾ —
37/64		0.5781	4.7/8	8.3/4	1	051337	¹⁾ —
19/32		0.5937	4.7/8	8.3/4	1	051338	¹⁾ —
39/64		0.6094	4.7/8	8.3/4	1	051339	¹⁾ —
5/8		0.6250	4.7/8	8.3/4	1	051340	¹⁾ —
41/64		0.6406	5.1/8	9"	1	051341	¹⁾ —
21/32		0.6563	5.1/8	9"	1	051342	¹⁾ —
43/64		0.6719	5.3/8	9.1/4	1	051343	¹⁾ —
11/16		0.6875	5.3/8	9.1/4	1	051344	¹⁾ —
45/64		0.7031	5.5/8	9.1/2	1	051345	¹⁾ —
23/32		0.7188	5.5/8	9.1/2	1	051346	¹⁾ —
47/64		0.7344	5.7/8	9.3/4	1	051347	¹⁾ —
3/4		0.7500	5.7/8	9.3/4	1	051348	¹⁾ —
49/64		0.7656	6"	9.7/8	1	051349	¹⁾ —
25/32		0.7813	6"	9.7/8	1	051350	¹⁾ —
51/64		0.7969	6.1/8	10"	1	051351	¹⁾ —
13/16		0.8125	6.1/8	10"	1	051352	¹⁾ —
53/64		0.8281	6.1/8	10"	1	051353	¹⁾ —
27/32		0.8438	6.1/8	10"	1	051354	¹⁾ —
55/64		0.8594	6.1/8	10"	1	051355	¹⁾ —
7/8		0.8750	6.1/8	10"	1	051356	¹⁾ —
57/64		0.8906	6.1/8	10"	1	051357	¹⁾ —
29/32		0.9063	6.1/8	10"	1	051358	¹⁾ —
59/64		0.9219	6.1/8	10.3/4	1	051359	¹⁾ —
15/16		0.9375	6.1/8	10.3/4	1	051360	¹⁾ —
61/64		0.9531	6.3/8	11"	1	051361	¹⁾ —
31/32		0.9688	6.3/8	11"	1	051362	¹⁾ —
63/64		0.9844	6.3/8	11"	1	051363	¹⁾ —
1"		1.0000	6.3/8	11"	1	051364	¹⁾ —

¹⁾ Notched Point