

HSS-E
ANSI
4XD
118°
ST Bronze
<b>R56CO</b>
33/64 - 1"
<b>180</b>
1.1 115H
1.2 98H
1.3 82F
1.4 66E
1.5 43D
1.6 30C
1.7
1.8
2.1 49D
2.2 23F
2.3 23B
2.4
3.1 89H
3.2 72E
3.3 62D
3.4 39D
4.1 56E
4.2 30C
4.3 16A
5.1 26F
5.2 13D
5.3 10A
6.1 115F
6.2 108H
6.3 89G
6.4 52F
7.1 108I
7.2 98H
7.3 89G
7.4 72G
8.1 98I
8.2 92G
8.3 46E
9.1 10A
10.1

# Cobalt Heavy Duty Reduced Shank Drill - 1/2" Shank

## Style R56CO

### How To Use This Chart:

1. Determine your Workpiece Material from the Application Material Groups (AMG) below.
2. Use the Icons to find Product Features.
3. Find the Surface Feet Per Minute (SFM) and Alpha Code  
example: 361W  
361 = SFM  
W = Alpha Code used to find your Feed Rate

## 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

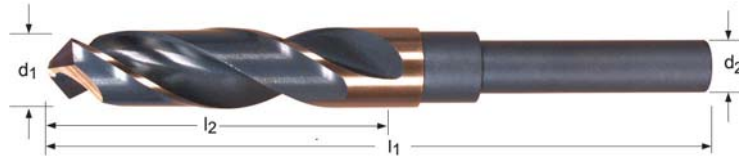
Application Material Groups (AMG)		Hardness HRC	ISO	
1. Steel	1.1 Magnetic soft steel	12L14, 12L15	<120 HB	P 1
	1.2 Structural Steel/ case carburising steel	1005-1025, 1214, 1215, A36	<200 HB	P 1
	1.3 Plain Carbon steel	1030-1060, 1050-1060, 1144-1146	<24	P 2
	1.4 Alloy steel	4140,4340,52100,8620 H11-H41,A2,D2,01,P20,420	<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	---	O
	8.2 Thermosetting plastics	Bakelit, Pertinax	---	O
	8.3 Reinforced plastic materials	CFK, GFKAFK	---	O
9. Hard Mat.	9.1 Cermets (Metal-ceramics)	Ferrotic	<54	H
10. Graphite	10.1 Standard graphite		---	O



# REDUCED SHANK DRILL

## Cobalt, Heavy Duty, Reduced Shank - 1/2" Shank

**R56CO** Silver & Deming Drills. Self centering Split Point reduces thrust. Cobalt base material with Bronze/Steam Oxide for wear resistance and lubricity. Suitable for ferrous materials.



R56CO

ANSI

4XD

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118°



33/64 - 1"

d <sub>1</sub> Ø Inch	d <sub>1</sub> decimal Inch	l <sub>2</sub> Inch	l <sub>1</sub> Inch	d <sub>2</sub> Ø Inch	Pack Qty	R56CO
33/64	0.5156	3"	6"	1/2	1	092333
17/32	0.5313	3"	6"	1/2	1	092334
35/64	0.5469	3"	6"	1/2	1	092335
9/16	0.5625	3"	6"	1/2	1	092336
37/64	0.5781	3"	6"	1/2	1	092337
19/32	0.5937	3"	6"	1/2	1	092338
39/64	0.6094	3"	6"	1/2	1	092339
5/8	0.6250	3"	6"	1/2	1	092340
41/64	0.6406	3"	6"	1/2	1	092341
21/32	0.6563	3"	6"	1/2	1	092342
43/64	0.6719	3"	6"	1/2	1	092343
11/16	0.6875	3"	6"	1/2	1	092344
45/64	0.7031	3"	6"	1/2	1	092345
23/32	0.7188	3"	6"	1/2	1	092346
47/64	0.7344	3"	6"	1/2	1	092347
3/4	0.7500	3"	6"	1/2	1	092348
49/64	0.7656	3"	6"	1/2	1	092349
25/32	0.7813	3"	6"	1/2	1	092350
51/64	0.7969	3"	6"	1/2	1	092351
13/16	0.8125	3"	6"	1/2	1	092352
53/64	0.8281	3"	6"	1/2	1	092353
27/32	0.8438	3"	6"	1/2	1	092354
55/64	0.8594	3"	6"	1/2	1	092355
7/8	0.8750	3"	6"	1/2	1	092356
57/64	0.8906	3"	6"	1/2	1	092357
29/32	0.9063	3"	6"	1/2	1	092358
59/64	0.9219	3"	6"	1/2	1	092359
15/16	0.9375	3"	6"	1/2	1	092360
61/64	0.9531	3"	6"	1/2	1	092361
31/32	0.9688	3"	6"	1/2	1	092362
63/64	0.9844	3"	6"	1/2	1	092363
1"	1.0000	3"	6"	1/2	1	092364