



COBALT JOBBER DRILL SETS

Cobalt Drill Set Feeds and Speeds

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How To Use This Chart:

- 1) Select your material in the ISO colored chart
- 2) Select your drill size in the columns
- 3) Start with the recommended RPM and feed (inch/rev)
 - Use your machine's maximum spindle speed if the listed RPM is higher than your max. Adjust the feed rate to match.

● Primary ○ Secondary

Feed: inch/rev
RPM: rev/min

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRC	Haas Cobalt Jobber Drill Sets	SFM	Drill Diameter						
									MILIMETER (mm)	1	2	3	4	5	6
									FRAC/NUM/LTR	#64	#47	#32	#22	#9	B
									DECIMAL (inch)	0.0469	.0785	.1160	.1570	.1960	.2380
P	1	Non-alloy steel	About 0.15% C	Annealed	125		●	132	RPM	10,723	6,407	4,336	3,203	2,566	2,113
									FEED	.0016 - .0031	.0016 - .0031	.0024 - .0039	.0031 - .0047	.0047 - .0063	.0047 - .0063
P	2		About 0.45% C	Annealed	190	13	●	115	RPM	9,383	5,606	3,794	2,803	2,245	1,849
									FEED	.0016 - .0031	.0016 - .0031	.0024 - .0039	.0031 - .0047	.0047 - .0063	.0047 - .0063
P	3		About 0.45% C	Quenched & tempered	250	25	●	99	RPM	8,043	4,805	3,252	2,403	1,924	1,585
								FEED	.0016 - .0031	.0016 - .0031	.0024 - .0039	.0031 - .0047	.0047 - .0063	.0047 - .0063	
P	4	About 0.75% C	Annealed	270	28	○	66	RPM	5,362	3,203	2,168	1,602	1,283	1,057	
								FEED	.0008 - .002	.0008 - .002	.0008 - .0024	.0016 - .0031	.0016 - .0039	.0016 - .0039	
P	5	About 0.75% C	Quenched & tempered	300	32										
P	6	Low alloy steel	Annealed	180	10	●	115	RPM	9,383	5,606	3,794	2,803	2,245	1,849	
									FEED	.0016 - .0031	.0016 - .0031	.0024 - .0039	.0031 - .0047	.0047 - .0063	.0047 - .0063
P	7		Quenched & tempered	275	29	○	99	RPM	8,043	4,770	3,252	2,403	1,924	1,585	
									FEED	.0016 - .0031	.0016 - .0031	.0024 - .0039	.0031 - .0047	.0047 - .0063	.0047 - .0063
P	8		Quenched & tempered	300	32	○	99	RPM	8,043	4,770	3,252	2,403	1,924	1,585	
								FEED	.0008 - .002	.0008 - .002	.0008 - .0024	.0016 - .0031	.0016 - .0039	.0016 - .0039	
P	9		Quenched & tempered	350	38										
P	10	High alloyed steel, and tool steel	Annealed	200	15	○	66	RPM	5,362	3,203	2,168	1,602	1,283	1,057	
									FEED	.0016 - .0031	.0016 - .0031	.0024 - .0039	.0031 - .0047	.0047 - .0063	.0047 - .0063
P	11		Quenched & Tempered	325	35										
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	●	82	RPM	6,702	4,004	2,710	2,002	1,604	1,321
									FEED	.0016 - .0031	.0016 - .0031	.0024 - .0039	.0031 - .0047	.0047 - .0063	.0047 - .0063
M	13		Martensitic	Quenched & Tempered	240	23	○	66	RPM	5,362	3,203	2,168	1,602	1,283	1,057
								FEED	.0016 - .0031	.0016 - .0031	.0024 - .0039	.0031 - .0047	.0047 - .0063	.0047 - .0063	
M	14		Austenitic	180	10	○	49	RPM	4,021	2,403	1,626	1,201	962	792	
								FEED	.0008 - .002	.0008 - .002	.0008 - .0024	.0016 - .0031	.0016 - .0039	.0016 - .0039	
K	15	Grey cast iron	Pearlitic / ferritic		180	10	○	132	RPM	10,723	6,407	4,336	3,203	2,566	2,113
									FEED	.0016 - .0031	.0016 - .0031	.0024 - .0039	.0031 - .0047	.0047 - .0063	.0047 - .0063
K	16		Pearlitic (Martensitic)		260	26	○	115	RPM	9,383	5,606	3,794	2,803	2,245	1,849
								FEED	.0008 - .002	.0008 - .002	.0008 - .0024	.0016 - .0031	.0016 - .0039	.0016 - .0039	
K	17	Nodular cast iron	Ferritic		160	3	○	132	RPM	10,723	6,407	4,336	3,203	2,566	2,113
									FEED	.0016 - .0031	.0016 - .0031	.0024 - .0039	.0031 - .0047	.0047 - .0063	.0047 - .0063
K	18		Pearlitic		250	25									
K	19	Malleable cast iron	Ferritic		130		○	115	RPM	9,383	5,606	3,794	2,803	2,245	1,849
									FEED	.0016 - .0031	.0016 - .0031	.0024 - .0039	.0031 - .0047	.0047 - .0063	.0047 - .0063
K	20		Pearlitic		230	21									
N	21	Aluminum-wrought alloy	Not Curable		60		○	214	RPM	17,425	10,411	7,045	5,205	4,170	3,434
									FEED	.002 - .0035	.002 - .0035	.0028 - .0043	.0047 - .0063	.0047 - .0071	.0047 - .0071
N	22		Curable	Hardened	100		○	214	RPM	17,425	10,411	7,045	5,205	4,170	3,434
								FEED	.002 - .0035	.002 - .0035	.0028 - .0043	.0047 - .0063	.0047 - .0071	.0047 - .0071	
N	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75		○	165	RPM	13,404	8,008	5,419	4,004	3,207	2,641
								FEED	.002 - .0035	.002 - .0035	.0028 - .0043	.0047 - .0063	.0047 - .0071	.0047 - .0071	
N	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic				○	99	RPM	8,043	4,805	3,252	2,403	1,924	1,585
				Rubber, Wood, etc.					FEED	.0016 - .0031	.0016 - .0031	.0024 - .0039	.0031 - .0047	.0047 - .0063	.0047 - .0063
S	36	Titanium Alloys	Pure Titanium		400 Rm		○	66	RPM	5,362	3,203	2,168	1,602	1,283	1,057
								FEED	.0008 - .002	.0008 - .002	.0008 - .0024	.0016 - .0031	.002 - .0035	.002 - .0035	



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-Use your machine's maximum spindle speed if the listed RPM is higher than your max. Adjust the feed rate to match.

Feed: inch/rev
RPM: rev/min

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRC	Haas Cobalt Jobber Drill Sets	SFM	Drill Diameter							
									MILIMETER (mm)	7	8	9	10	11	12	13
									FRAC/NUM/LTR	J	O	T	X	7/16	15/32	1/2
										.2770	.3160	.3580	.3970	.4375	.4688	.5000
P	1	Non-alloy steel	About 0.15% C	Annealed	125		●	132	RPM	1,816	1,592	1,405	1,267	1,150	1,073	1,006
									FEED	.0047-.0071	.0047-.0071	.0063-.0087	.0063-.0087	.0071-.0094	.0071-.0094	.0071-.0094
P	2		About 0.45% C	Annealed	190	13	●	115	RPM	1,589	1,393	1,229	1,108	1,006	939	880
									FEED	.0047-.0071	.0047-.0071	.0063-.0087	.0063-.0087	.0071-.0094	.0071-.0094	.0071-.0094
P	3		About 0.45% C	Quenched & tempered	250	25	●	99	RPM	1,362	1,194	1,054	950	862	805	754
								FEED	.0047-.0071	.0047-.0071	.0063-.0087	.0063-.0087	.0071-.0094	.0071-.0094	.0071-.0094	
P	4	About 0.75% C	Annealed	270	28	○	66	RPM	908	796	702	633	575	536	503	
								FEED	.0024-.0047	.0024-.0047	.0031-.0055	.0031-.0055	.0047-.0071	.0047-.0071	.0047-.0071	
P	5	About 0.75% C	Quenched & tempered	300	32											
P	6	Low alloy steel	Annealed	180	10	●	115	RPM	1,589	1,393	1,229	1,108	1,006	939	880	
									FEED	.0047-.0071	.0047-.0071	.0063-.0087	.0063-.0087	.0071-.0094	.0071-.0094	
P	7		Quenched & tempered	275	29	○	99	RPM	1,362	1,194	1,054	950	862	805	754	
								FEED	.0047-.0071	.0047-.0071	.0063-.0087	.0063-.0087	.0071-.0094	.0071-.0094	.0071-.0094	
P	8	Quenched & tempered	300	32	○	99	RPM	1,362	1,194	1,054	950	862	805	754		
							FEED	.0047-.0071	.0047-.0071	.0063-.0087	.0063-.0087	.0071-.0094	.0071-.0094	.0071-.0094		
P	9	Quenched & tempered	350	38												
P	10	High alloyed steel, and tool steel	Annealed	200	15	○	66	RPM	908	796	702	633	575	536	503	
								FEED	.0047-.0071	.0047-.0071	.0063-.0087	.0063-.0087	.0071-.0094	.0071-.0094	.0071-.0094	
P	11	Quenched & Tempered	325	35												
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	●	82	RPM	1,135	995	878	792	718	670	629
									FEED	.0047-.0071	.0047-.0071	.0063-.0087	.0063-.0087	.0071-.0094	.0071-.0094	.0071-.0094
M	13		Martensitic	Quenched & Tempered	240	23	○	66	RPM	908	796	702	633	575	536	503
								FEED	.0047-.0071	.0047-.0071	.0063-.0087	.0063-.0087	.0071-.0094	.0071-.0094	.0071-.0094	
M	14	Austenitic	180	10	○	49	RPM	681	597	527	475	431	402	377		
							FEED	.0024-.0047	.0024-.0047	.0031-.0055	.0031-.0055	.0047-.0071	.0047-.0071	.0047-.0071		
K	15	Grey cast iron	Pearlitic / ferritic	180	10	○	132	RPM	1,816	1,592	1,405	1,267	1,150	1,073	1,006	
								FEED	.0047-.0071	.0047-.0071	.0063-.0087	.0063-.0087	.0071-.0094	.0071-.0094	.0071-.0094	
K	16	Pearlitic (Martensitic)	260	26	○	115	RPM	1,589	1,393	1,229	1,108	1,006	939	880		
							FEED	.0024-.0047	.0024-.0047	.0031-.0055	.0031-.0055	.0047-.0071	.0047-.0071	.0047-.0071		
K	17	Nodular cast iron	Ferritic	160	3	○	132	RPM	1,816	1,592	1,405	1,267	1,150	1,073	1,006	
								FEED	.0047-.0071	.0047-.0071	.0063-.0087	.0063-.0087	.0071-.0094	.0071-.0094	.0071-.0094	
K	18	Pearlitic	250	25												
K	19	Malleable cast iron	Ferritic	130		○	115	RPM	1,589	1,393	1,229	1,108	1,006	939	880	
								FEED	.0047-.0071	.0047-.0071	.0063-.0087	.0063-.0087	.0071-.0094	.0071-.0094	.0071-.0094	
K	20	Pearlitic	230	21												
N	21	Aluminum-wrought alloy	Not Curable	60		○	214	RPM	2,950	2,586	2,283	2,059	1,868	1,743	1,635	
								FEED	.0055-.0079	.0055-.0079	.0063-.0087	.0063-.0087	.0087-.011	.0087-.011	.0087-.011	
N	22	Curable	Hardened	100		○	214	RPM	2,950	2,586	2,283	2,059	1,868	1,743	1,635	
							FEED	.0055-.0079	.0055-.0079	.0063-.0087	.0063-.0087	.0087-.011	.0087-.011	.0087-.011		
N	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75		○	165	RPM	2,270	1,989	1,756	1,584	1,437	1,341	1,257	
								FEED	.0055-.0079	.0055-.0079	.0063-.0087	.0063-.0087	.0087-.011	.0087-.011	.0087-.011	
N	24		≤ 12% Si, Curable	Hardened	90											
N	25	> 12% Si, Not Curable		130												
N	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%	110												
N	27		CuZn, CuSnZn (Brass)	90												
N	28		CuSn, lead-free copper and electrolytic copper	100												
N	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic			○	99	RPM	1,362	1,194	1,054	950	862	805	754	
								FEED	.0047-.0071	.0047-.0071	.0063-.0087	.0063-.0087	.0071-.0094	.0071-.0094	.0071-.0094	
S	36	Titanium Alloys	Pure Titanium	400 Rm		○	66	RPM	908	796	702	633	575	536	503	
								FEED	.0024-.0039	.0024-.0039	.0028-.0051	.0028-.0051	.0031-.0055	.0031-.0055	.0031-.0055	