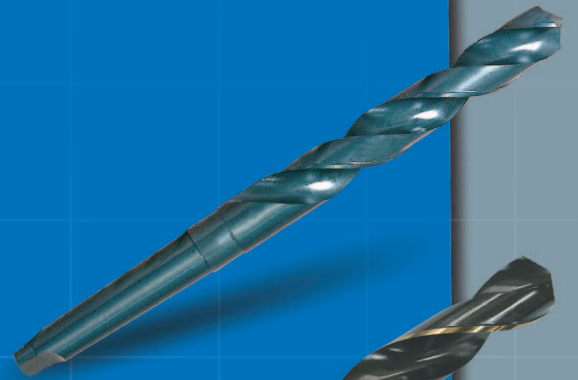


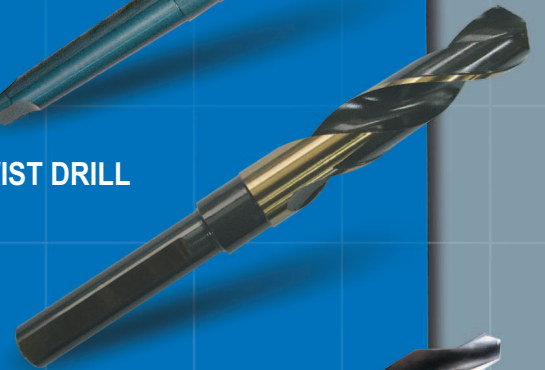
**D309**



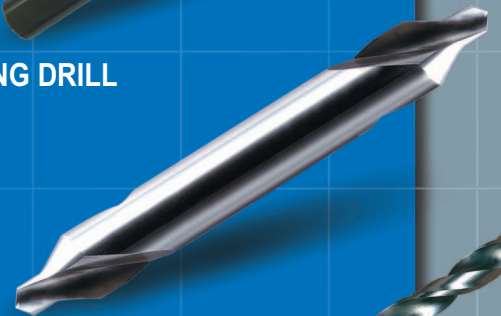
# MORE DRILLS



HSS(M2) MORSE TAPER SHANK TWIST DRILL



HSS(M2) 118° SPLIT POINT 3FLAT BLACK&GOLD SILVER&DEMING DRILL



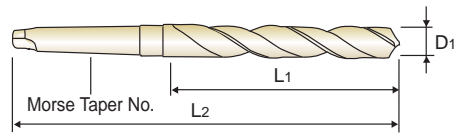
HSS(M2) 60° POINT CENTER DRILL



CARBIDE JOBBERS LENGTH TWIST DRILL

**BEST VALUE IN THE WORLD OF CUTTING TOOLS**

# HSS(M2) MORSE TAPER SHANK TWIST DRILL



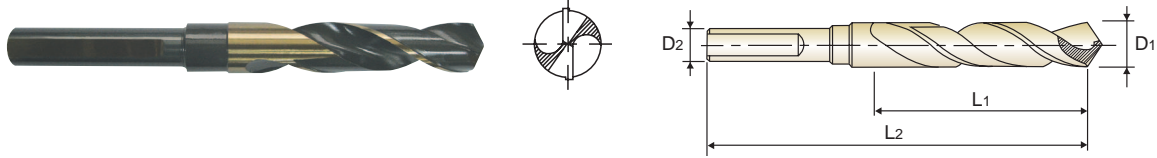
## D1211 series

Unit : inch

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
D1211032	1/2	4*3/8	8*1/4	2
D1211033	33/64	4*5/8	8*1/2	2
D1211034	17/32	4*5/8	8*1/2	2
D1211035	35/64	4*7/8	8*3/4	2
D1211036	9/16	4*7/8	8*3/4	2
D1211037	37/64	4*7/8	8*3/4	2
D1211038	19/32	4*7/8	8*3/4	2
D1211039	39/64	4*7/8	8*3/4	2
D1211040	5/8	4*7/8	8*3/4	2
D1211041	41/64	5*1/8	9	2
D1211042	21/32	5*1/8	9	2
D1211043	43/64	5*3/8	9*1/4	2
D1211044	11/16	5*3/8	9*1/4	2
D1211045	45/64	5*5/8	9*1/2	2
D1211046	23/32	5*5/8	9*1/2	2
D1211047	47/64	5*7/8	9*3/4	2
D1211048	3/4	5*7/8	9*3/4	2
D1211049	49/64	6	9*7/8	2
D1211050	25/32	6	9*7/8	2
D1211051	51/64	6*1/8	10*3/4	3
D1211052	13/16	6*1/8	10*3/4	3
D1211053	53/64	6*1/8	10*3/4	3
D1211054	27/32	6*1/8	10*3/4	3
D1211055	55/64	6*1/8	10*3/4	3
D1211056	7/8	6*1/8	10*3/4	3
D1211057	57/64	6*1/8	10*3/4	3
D1211058	29/32	6*1/8	10*3/4	3
D1211059	59/64	6*1/8	10*3/4	3
D1211060	15/16	6*1/8	10*3/4	3
D1211061	61/64	6*3/8	11	3
D1211062	31/32	6*3/8	11	3
D1211063	63/64	6*3/8	11	3
D1211100	1	6*3/8	11	3
D1211101	1*1/64	6*1/2	11*1/8	3
D1211102	1*1/32	6*1/2	11*1/8	3
D1211103	1*3/64	6*5/8	11*1/4	3
D1211104	1*1/16	6*5/8	11*1/4	3
D1211105	1*5/64	6*7/8	12*1/2	4
D1211106	1*3/32	6*7/8	12*1/2	4
D1211107	1*7/64	7*1/8	12*3/4	4
D1211108	1*1/8	7*1/8	12*3/4	4
D1211109	1*9/64	7*1/4	12*7/8	4
D1211110	1*5/32	7*1/4	12*7/8	4
D1211111	1*11/64	7*3/8	13	4

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
D1211112	1*3/16	7*3/8	13	4
D1211113	1*13/64	7*1/2	13*1/8	4
D1211114	1*7/32	7*1/2	13*1/8	4
D1211115	1*15/64	7*7/8	13*1/2	4
D1211116	1*1/4	7*7/8	13*1/2	4
D1211117	1*17/64	8*1/2	14*1/8	4
D1211118	1*9/32	8*1/2	14*1/8	4
D1211119	1*19/64	8*5/8	14*1/4	4
D1211120	1*5/16	8*5/8	14*1/4	4
D1211121	1*21/64	8*3/4	14*3/8	4
D1211122	1*11/32	8*3/4	14*3/8	4
D1211123	1*23/64	8*7/8	14*1/2	4
D1211124	1*3/8	8*7/8	14*1/2	4
D1211126	1*13/32	9	14*5/8	4
D1211128	1*7/16	9*1/8	14*3/4	4
D1211130	1*15/32	9*1/4	14*7/8	4
D1211132	1*1/2	9*3/8	15	4
D1211133	1*33/64	9*3/8	16*3/8	4
D1211134	1*17/32	9*3/8	16*3/8	5
D1211136	1*9/16	9*5/8	16*5/8	5
D1211138	1*19/32	9*7/8	16*7/8	5
D1211140	1*5/8	10	17	5
D1211142	1*21/32	10*1/8	17*1/8	5
D1211144	1*11/16	10*1/8	17*1/8	5
D1211146	1*23/32	10*1/8	17*1/8	5
D1211148	1*3/4	10*1/8	17*1/8	5
D1211152	1*13/16	10*1/8	17*1/8	5
D1211154	1*27/32	10*1/8	17*1/8	5
D1211156	1*7/8	10*3/8	17*3/8	5
D1211160	1*15/16	10*3/8	17*3/8	5
D1211162	1*31/32	10*3/8	17*3/8	5
D1211200	2	10*3/8	17*3/8	5
D1211202	2*1/32	10*3/8	17*3/8	5
D1211204	2*1/16	10*1/4	17*3/8	5
D1211206	2*3/32	10*1/4	17*3/8	5
D1211208	2*1/8	10*1/4	17*3/8	5
D1211210	2*5/32	10*1/4	17*3/8	5
D1211212	2*3/16	10*1/4	17*3/8	5
D1211214	2*7/32	10*1/8	17*3/8	5
D1211216	2*1/4	10*1/8	17*3/8	5
D1211220	2*5/16	10*1/8	17*3/8	5
D1211224	2*3/8	10*1/8	17*3/8	5
D1211228	2*7/16	11*1/4	18*3/4	5
D1211232	2*1/2	11*1/4	18*3/4	5

# HSS(M2) 118° SPLIT POINT 3FLAT BLACK&GOLD SILVER&DEMING DRILL



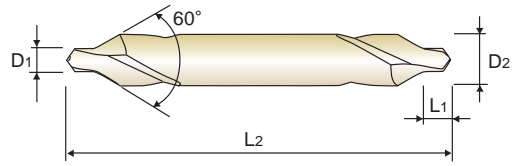
## D1191 series

Unit : inch

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
	D1	D2	L1	L2
D1191032	1/2	1/2	3	6
D1191033	33/64	1/2	3	6
D1191034	17/32	1/2	3	6
D1191035	35/64	1/2	3	6
D1191036	9/16	1/2	3	6
D1191037	37/64	1/2	3	6
D1191038	19/32	1/2	3	6
D1191039	39/64	1/2	3	6
D1191040	5/8	1/2	3	6
D1191041	41/64	1/2	3	6
D1191042	21/32	1/2	3	6
D1191043	43/64	1/2	3	6
D1191044	11/16	1/2	3	6
D1191045	45/64	1/2	3	6
D1191046	23/32	1/2	3	6
D1191047	47/64	1/2	3	6
D1191048	3/4	1/2	3	6
D1191049	49/64	1/2	3	6
D1191050	25/32	1/2	3	6
D1191051	51/64	1/2	3	6
D1191052	13/16	1/2	3	6
D1191053	53/64	1/2	3	6
D1191054	27/32	1/2	3	6
D1191055	55/64	1/2	3	6
D1191056	7/8	1/2	3	6
D1191057	57/64	1/2	3	6
D1191058	29/32	1/2	3	6
D1191059	59/64	1/2	3	6
D1191060	15/16	1/2	3	6

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
	D1	D2	L1	L2
D1191061	61/64	1/2	3	6
D1191062	31/32	1/2	3	6
D1191063	63/64	1/2	3	6
D1191064	1	1/2	3	6
D1191101	1*1/64	1/2	3	6
D1191102	1*1/32	1/2	3	6
D1191103	1*3/64	1/2	3	6
D1191104	1*1/16	1/2	3	6
D1191105	1*5/64	1/2	3	6
D1191106	1*3/32	1/2	3	6
D1191107	1*7/64	1/2	3	6
D1191108	1*1/8	1/2	3	6
D1191109	1*9/64	1/2	3	6
D1191110	1*5/32	1/2	3	6
D1191111	1*11/64	1/2	3	6
D1191112	1*3/16	1/2	3	6
D1191113	1*13/64	1/2	3	6
D1191114	1*7/32	1/2	3	6
D1191115	1*15/64	1/2	3	6
D1191116	1*1/4	1/2	3	6
D1191118	1*9/32	1/2	3	6
D1191120	1*5/16	1/2	3	6
D1191122	1*11/32	1/2	3	6
D1191124	1*3/8	1/2	3	6
D1191126	1*13/32	1/2	3	6
D1191128	1*7/16	1/2	3	6
D1191130	1*15/32	1/2	3	6
D1191132	1*1/2	1/2	3	6

# HSS(M2) CENTER DRILL



▶ **D1C90 series**

## REGULAR LENGTH (60°)

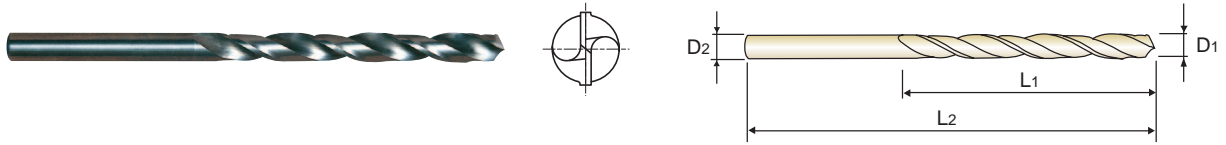
EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
	D1	D2	L1	L2
D1C90079	3/64	1/8	1/16	1*1/2
D1C90080	1/16	3/16	5/64	1*3/4
D1C90081	3/32	1/4	1/8	2
D1C90082	1/8	5/16	5/32	2*1/4
D1C90083	3/16	7/16	1/4	2*1/2
D1C90084	7/32	1/2	7/32	3

## LONG LENGTH (60°)

Unit : inch

EDP No.	Size	Drill Diameter	Shank Diameter	Flute Length	Overall Length
		D1	D2	L1	L2
D1C90085	1	3/64	1/8	3/64	3
D1C90086	1	3/64	1/8	3/64	4
D1C90087	1	3/64	1/8	3/64	5
D1C90088	1	3/64	1/8	3/64	6
D1C90089	2	5/64	3/16	5/64	3
D1C90090	2	5/64	3/16	5/64	4
D1C90091	2	5/64	3/16	5/64	5
D1C90092	2	5/64	3/16	5/64	6
D1C90093	3	7/64	1/4	7/64	4
D1C90094	3	7/64	1/4	7/64	5
D1C90095	3	7/64	1/4	7/64	6
D1C90096	4	1/8	5/16	1/8	4
D1C90097	4	1/8	5/16	1/8	5
D1C90098	4	1/8	5/16	1/8	6
D1C90099	5	3/16	7/16	3/16	4
D1C90100	5	3/16	7/16	3/16	5
D1C90101	5	3/16	7/16	3/16	6
D1C90102	6	7/32	1/2	7/32	4
D1C90103	6	7/32	1/2	7/32	5
D1C90104	6	7/32	1/2	7/32	6

# CARBIDE JOBBERS LENGTH TWIST DRILL



D1 = D2

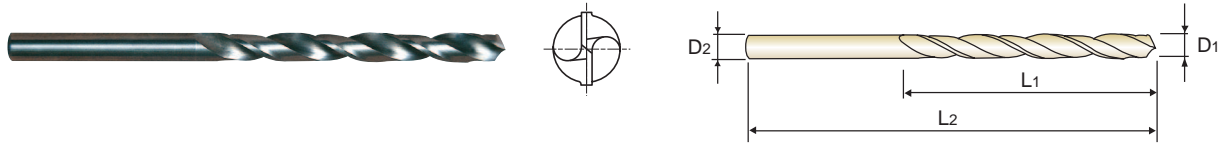
## D5412 series

Unit : inch

EDP No.	Size	Drill Diameter		
		D1	L1	L2
D5412101	1	.2280	1*3/4	3
D5412102	2	.2210	1*3/4	3
D5412103	3	.2130	1*3/4	3
D5412104	4	.2090	1*3/4	3
D5412105	5	.2055	1*3/4	3
D5412106	6	.2040	1*3/4	3
D5412107	7	.2010	1*3/4	3
D5412108	8	.1990	1*3/4	3
D5412109	9	.1960	1*3/4	3
D5412110	10	.1935	1*5/8	2*3/4
D5412111	11	.1910	1*5/8	2*3/4
D5412112	12	.1890	1*5/8	2*3/4
D5412113	13	.1850	1*5/8	2*3/4
D5412114	14	.1820	1*5/8	2*3/4
D5412115	15	.1800	1*5/8	2*3/4
D5412116	16	.1770	1*5/8	2*3/4
D5412117	17	.1730	1*5/8	2*3/4
D5412118	18	.1695	1*5/8	2*3/4
D5412119	19	.1660	1*5/8	2*3/4
D5412120	20	.1610	1*3/8	2*1/2
D5412121	21	.1590	1*3/8	2*1/2
D5412122	22	.1570	1*3/8	2*1/2
D5412123	23	.1540	1*3/8	2*1/2
D5412124	24	.1520	1*3/8	2*1/2
D5412125	25	.1495	1*3/8	2*1/2
D5412126	26	.1470	1*3/8	2*1/2
D5412127	27	.1440	1*3/8	2*1/2
D5412128	28	.1405	1*3/8	2*1/2

EDP No.	Size	Drill Diameter		
		D1	L1	L2
D5412129	29	.1360	1*3/8	2*1/2
D5412130	30	.1285	1*1/4	2*1/4
D5412131	31	.1200	1*1/4	2*1/4
D5412132	32	.1160	1*1/4	2*1/4
D5412133	33	.1130	1*1/4	2*1/4
D5412134	34	.1110	1*1/4	2*1/4
D5412135	35	.1100	1*1/4	2*1/4
D5412136	36	.1065	1*1/4	2*1/4
D5412137	37	.1040	1*1/4	2*1/4
D5412138	38	.1015	1*1/4	2*1/4
D5412139	39	.0995	1*1/4	2*1/4
D5412140	40	.0980	1	2
D5412141	41	.0960	1	2
D5412142	42	.0935	1	2
D5412143	43	.0890	1	2
D5412144	44	.0860	1	2
D5412145	45	.0820	7/8	1*3/4
D5412146	46	.0810	7/8	1*3/4
D5412147	47	.0785	7/8	1*3/4
D5412148	48	.0760	7/8	1*3/4
D5412149	49	.0730	7/8	1*3/4
D5412150	50	.0700	7/8	1*3/4
D5412151	51	.0670	3/4	1*1/2
D5412152	52	.0635	3/4	1*1/2
D5412153	53	.0595	3/4	1*1/2
D5412154	54	.0550	3/4	1*1/2
D5412155	55	.0520	3/4	1*1/2
D5412156	56	.0465	3/4	1*1/2

# CARBIDE JOBBERS LENGTH TWIST DRILL



**D1 = D2**

## ▶ D5413 series

EDP No.	Size	Drill Diameter	Flute Length	Overall Length
		D1	L1	L2
D5413201	A	.2340	2	3*1/4
D5413202	B	.2380	2	3*1/4
D5413203	C	.2420	2	3*1/4
D5413204	D	.2460	2	3*1/4
D5413205	E	.2500	2	3*1/4
D5413206	F	.2570	2	3*1/4
D5413207	G	.2610	2*1/8	3*1/2
D5413208	H	.2660	2*1/8	3*1/2
D5413209	I	.2720	2*1/8	3*1/2
D5413210	J	.2770	2*1/8	3*1/2
D5413211	K	.2810	2*1/8	3*1/2
D5413212	L	.2900	2*1/8	3*1/2
D5413213	M	.2950	2*3/8	3*3/4
D5413214	N	.3020	2*3/8	3*3/4
D5413215	O	.3160	2*3/8	3*3/4
D5413216	P	.3230	2*3/8	3*3/4
D5413217	Q	.3320	2*1/2	4
D5413218	R	.3390	2*1/2	4
D5413219	S	.3480	2*1/2	4
D5413220	T	.3580	2*3/4	4*1/4
D5413221	U	.3680	2*3/4	4*1/4
D5413222	V	.3770	2*3/4	4*1/4
D5413223	W	.3860	2*7/8	4*1/2
D5413224	X	.3970	2*7/8	4*1/2
D5413225	Y	.4040	2*7/8	4*1/2
D5413226	Z	.4130	2*7/8	4*1/2

## ▶ D5417 series

Unit : inch

EDP No.	Drill Diameter	Flute Length	Overall Length
	D1	L1	L2
D5417003	3/64	3/4	1*1/2
D5417004	1/16	3/4	1*1/2
D5417005	5/64	7/8	1*3/4
D5417006	3/32	1	2
D5417007	7/64	1*1/4	2*1/4
D5417008	1/8	1*1/4	2*1/4
D5417009	9/64	1*3/8	2*1/2
D5417010	5/32	1*3/8	2*1/2
D5417011	11/64	1*5/8	2*3/4
D5417012	3/16	1*5/8	2*3/4
D5417013	13/64	1*3/4	3
D5417014	7/32	1*3/4	3
D5417015	15/64	2	3*1/4
D5417016	1/4	2x	3*1/4
D5417017	17/64	2*1/8	3*1/2
D5417018	9/32	2*1/8	3*1/2
D5417019	19/64	2*3/8	3*3/4
D5417020	5/16	2*3/8	3*3/4
D5417021	21/64	2*1/2	4
D5417022	11/32	2*1/2	4
D5417023	23/64	2*3/4	4*1/4
D5417024	3/8	2*3/4	4*1/4
D5417025	25/64	2*7/8	4*1/2
D5417026	13/32	2*7/8	4*1/2
D5417027	27/64	2*7/8	4*1/2
D5417028	7/16	2*7/8	4*1/2
D5417029	29/64	3	4*3/4
D5417030	15/32	3	4*3/4
D5417031	31/64	3	4*3/4
D5417032	1/2	3	4*3/4

# Recommended cutting conditions

## D1211, D1191

WORK MATERIAL	CARBON STEELS		CARBON STEELS		CARBON STEELS		ALLOY STEELS		ALLOY STEELS		STAINLESS STEELS		TITANIUM ALLOYS	
			~ HRc 23		HRc 23 ~ 28		HRc 23 ~ 34		HRc 34 ~ 38		HRc 23			
HARDNESS														
DIAMETER (inch)	N	S	N	S	N	S	N	S	N	S	N	S	N	S
3/32	3380	.0010	2550	.0010	1900	.0006	2380	.0008	1400	.0006	2550	.0010	1400	.0008
1/8	2700	.0020	2000	.0020	1500	.0010	1880	.0020	1100	.0008	2000	.0020	1100	.0010
13/64	1700	.0025	1280	.0025	960	.0015	1190	.0025	700	.0010	1280	.0025	700	.0015
5/16	1050	.0051	780	.0051	590	.0030	730	.0051	430	.0015	780	.0051	430	.0030
7/16	750	.0059	560	.0059	425	.0030	520	.0071	310	.0020	560	.0059	430	.0030
3/4	440	.0091	330	.0091	255	.0051	300	.0091	180	.0020	330	.0091	180	.0051
1*17/64	260	.0110	195	.0110	145	.0071	180	.0071	107	.0030	195	.0110	107	.0071
1*31/32	165	.0130	125	.0130	93	.0079	115	.0079	68	.0030	125	.0130	68	.0079

WORK MATERIAL	TOOL STEELS		CAST IRON		ALUMINUM ALLOYS		MAGNESIUM ALLOYS		ZINC ALLOYS		PLASTIC	
	N	S	N	S	N	S	N	S	N	S	N	S
3/32	3180	.0017	2250	.0010	6400	.0015	8600	.0015	6400	.0015	3380	.0010
1/8	2500	.0020	2000	.0020	5000	.0025	6800	.0025	5000	.0025	2700	.0020
13/64	1590	.0025	1280	.0025	3200	.0030	4300	.0030	3200	.0030	1700	.0025
5/16	970	.0051	780	.0051	2000	.0071	2600	.0071	2000	.0071	1050	.0051
7/16	700	.0071	560	.0059	1400	.0079	1900	.0079	1400	.0079	750	.0059
3/4	440	.0091	330	.0091	820	.0118	1100	.0118	820	.0118	440	.0091
1*17/64	240	.0118	195	.0110	490	.0150	660	.0150	490	.0150	260	.0110
1*31/32	150	.0169	125	.0130	310	.0181	415	.0181	310	.0181	165	.0130

N=rev/min  
S=inch/rev

## D5412, D5413, D5417

WORK MATERIAL	NON-ALLOY STEELS		ALLOY STEELS		SOFT GREY CAST IRON		HARD GREY CAST IRON		STAINLESS STEELS		AL-SI ALLOY, Si<10%		AL-SI ALLOY, Si>10%		TI, NI ALLOY STEELS	
	N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S
3/64	23000	.0012	17200	.0012	32000	.0016	23000	.0016	12000	.0016	54000	.0020	42000	.0020	11800	.0008
5/64	11500	.0016	8600	.0016	16000	.0020	11500	.0020	6000	.0012	27000	.0024	21000	.0024	5900	.0012
1/8	7800	.0020	5750	.0020	10500	.0024	7600	.0024	4000	.0016	18000	.0028	14000	.0028	3900	.0016
5/32	5800	.0024	4300	.0024	7800	.0028	5700	.0028	3000	.0020	13000	.0031	10500	.0031	2950	.0020
13/64	4700	.0028	3450	.0028	6200	.0031	4550	.0031	2400	.0024	10500	.0035	8500	.0035	2350	.0024
15/64	3900	.0031	2850	.0031	5200	.0035	3800	.0035	2000	.0028	8800	.0043	7100	.0043	1950	.0028
9/32	3350	.0035	2450	.0035	4500	.0039	3250	.0039	1700	.0031	7600	.0051	6100	.0051	1700	.0031
5/16	2900	.0039	2150	.0039	3900	.0047	2850	.0047	1500	.0035	6600	.0059	5350	.0059	1450	.0035
23/64	2600	.0043	1900	.0043	3450	.0055	2550	.0055	1350	.0039	5900	.0067	4750	.0067	1300	.0039
25/64	2350	.0047	1700	.0047	3100	.0063	2300	.0063	1200	.0043	5300	.0075	4250	.0075	1200	.0043
7/16	2150	.0051	1600	.0051	2850	.0071	2100	.0071	1100	.0047	4850	.0083	3900	.0083	1050	.0047
15/32	1950	.0055	1450	.0055	2600	.0079	1900	.0079	1000	.0051	4450	.0091	3550	.0091	980	.0051
33/64	1800	.0063	1350	.0063	2400	.0079	1750	.0079	950	.0051	4100	.0098	3300	.0098	905	.0051

N=rev/min  
S=inch/rev