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# Jobber Length

## General Purpose Jobber Length

### FEATURES

- 118° point
- HSS substrate with general-purpose geometry
- Black oxide finish for increased wear resistance and improved lubricity
- Bright finish for nonferrous and low-tensile steel applications
- TiN-coated finish for longer tool life and increased lubricity

- Available with 3/8" reduced shanks (see page 4)
- For general-purpose drilling and maintenance applications



### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1899 Black Oxide	Style 1898 Bright	Style 1898T TiN
1/32	.0312	0.79	1-3/8	1/2	C22643	—	—
60	.0400	1.02	1-5/8	11/16	C22645	C23024	C19159
59	.0410	1.04	1-5/8	11/16	C22646	C23025	C19158
58	.0420	1.07	1-5/8	11/16	C22647	C23026	C19157
57	.0430	1.09	1-3/4	3/4	C22648	C23027	C19156
56	.0465	1.18	1-3/4	3/4	C22649	C23028	C19155
3/64	.0469	1.20	1-3/4	3/4	C22644	—	—
55	.0520	1.32	1-7/8	7/8	C22650	C23029	C19154
54	.0550	1.40	1-7/8	7/8	C22651	C23030	C19153
53	.0595	1.51	1-7/8	7/8	C22652	C23031	C19152
1/16	.0625	1.59	1-7/8	7/8	C22653	C22995	C19160
52	.0635	1.61	1-7/8	7/8	C22654	C23032	C19151
51	.0670	1.70	2	1	C22655	C23033	C19150
50	.0700	1.78	2	1	C22656	C23034	C19149
49	.0730	1.85	2	1	C22657	C23035	C19148
48	.0760	1.93	2	1	C22658	C23036	C19147
5/64	.0781	1.98	2	1	C22659	C22996	C19161
47	.0785	1.99	2	1	C22660	C23037	C19146
46	.0810	2.06	2-1/8	1-1/8	C22661	C23038	C19145
45	.0820	2.08	2-1/8	1-1/8	C22662	C23039	C19144
44	.0860	2.18	2-1/8	1-1/8	C22663	C23040	C19143
43	.0890	2.26	2-1/4	1-1/4	C22664	C23041	C19142
42	.0935	2.37	2-1/4	1-1/4	C22665	C23042	C19141
3/32	.0938	2.38	2-1/4	1-1/4	C22666	C22997	C19162
41	.0960	2.44	2-3/8	1-3/8	C22667	C23043	C19140
40	.0980	2.49	2-3/8	1-3/8	C22668	C23044	C19139
39	.0995	2.53	2-3/8	1-3/8	C22669	C23045	C19138
38	.1015	2.58	2-1/2	1-7/16	C22670	C23046	C19137
37	.1040	2.64	2-1/2	1-7/16	C22671	C23047	C19136
36	.1065	2.71	2-1/2	1-7/16	C22672	C23048	C19135
7/64	.1094	2.78	2-5/8	1-1/2	C22673	C22998	C19163
35	.1100	2.79	2-5/8	1-1/2	C22674	C23049	C19134
34	.1110	2.82	2-5/8	1-1/2	C22675	C23050	C19133
33	.1130	2.87	2-5/8	1-1/2	C22676	C23051	C19132
32	.1160	2.95	2-3/4	1-5/8	C22677	C23052	C19131
31	.1200	3.05	2-3/4	1-5/8	C22678	C23053	C19130

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# Jobber Length

## General Purpose Jobber Length (continued)

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1899 Black Oxide	Style 1898 Bright	Style 1898T TiN
1/8	.1250	3.18	2-3/4	1-5/8	C22679	C22999	C19164
30	.1285	3.26	2-3/4	1-5/8	C22680	C23054	C19129
29	.1360	3.45	2-7/8	1-3/4	C22681	C23055	C19128
28	.1405	3.57	2-7/8	1-3/4	C22682	C23056	C19127
9/64	.1406	3.57	2-7/8	1-3/4	C22683	C23000	C19165
27	.1440	3.66	3	1-7/8	C22684	C23057	C19126
26	.1470	3.73	3	1-7/8	C22685	C23058	C19125
25	.1495	3.80	3	1-7/8	C22686	C23059	C19124
24	.1520	3.86	3-1/8	2	C22687	C23060	C19123
23	.1540	3.91	3-1/8	2	C22688	C23061	C19122
5/32	.1562	3.97	3-1/8	2	C22689	C23001	C19166
22	.1570	3.99	3-1/8	2	C22690	C23062	C19121
21	.1590	4.04	3-1/4	2-1/8	C22691	C23063	C19120
20	.1610	4.09	3-1/4	2-1/8	C22692	C23064	C19119
19	.1660	4.22	3-1/4	2-1/8	C22693	C23065	C19118
18	.1695	4.31	3-1/4	2-1/8	C22694	C23066	C19117
11/64	.1719	4.37	3-1/4	2-1/8	C22695	C23002	C19167
17	.1730	4.39	3-3/8	2-3/16	C22696	C23067	C19116
16	.1770	4.50	3-3/8	2-3/16	C22697	C23068	C19115
15	.1800	4.57	3-3/8	2-3/16	C22698	C23069	C19114
14	.1820	4.62	3-3/8	2-3/16	C22699	C23070	C19113
13	.1850	4.70	3-1/2	2-5/16	C22700	C23071	C19112
3/16	.1875	4.76	3-1/2	2-5/16	C22701	C23003	C19168
12	.1890	4.80	3-1/2	2-5/16	C22702	C23072	C19111
11	.1910	4.85	3-1/2	2-5/16	C22703	C23073	C19110
10	.1935	4.91	3-5/8	2-7/16	C22704	C23074	C19109
9	.1960	4.98	3-5/8	2-7/16	C22705	C23075	C19108
8	.1990	5.05	3-5/8	2-7/16	C22706	C23076	C19107
7	.2010	5.11	3-5/8	2-7/16	C22707	C23077	C19106
13/64	.2031	5.16	3-5/8	2-7/16	C22708	C23004	C19169
6	.2040	5.18	3-3/4	2-1/2	C22709	C23078	C19105
5	.2055	5.22	3-3/4	2-1/2	C22710	C23079	C19104
4	.2090	5.31	3-3/4	2-1/2	C22711	C23080	C19103
3	.2130	5.41	3-3/4	2-1/2	C22712	C23081	C19102
7/32	.2188	5.56	3-3/4	2-1/2	C22713	C23005	C19170
2	.2210	5.61	3-7/8	2-5/8	C22714	C23082	C19101
1	.2280	5.79	3-7/8	2-5/8	C22715	C23083	C19100
A	.2340	5.94	3-7/8	2-5/8	C22716	C22970	—
15/64	.2344	5.95	3-7/8	2-5/8	C22717	C23006	C19171
B	.2380	6.05	4	2-3/4	C22718	C22971	—
C	.2420	6.15	4	2-3/4	C22719	C22972	—
D	.2460	6.25	4	2-3/4	C22720	C22973	C19193
1/4. E	.2500	6.35	4	2-3/4	C22721	C23007	C19172
F	.2570	6.53	4-1/8	2-7/8	C22722	C22974	C19194
G	.2610	6.63	4-1/8	2-7/8	C22723	C22975	C19195
17/64	.2656	6.75	4-1/8	2-7/8	C22724	C23008	C19173
H	.2660	6.76	4-1/8	2-7/8	C22725	C22976	C19196
I	.2720	6.91	4-1/8	2-7/8	C22726	C22977	C19197
J	.2770	7.04	4-1/8	2-7/8	C22727	C22978	C19198
K	.2810	7.14	4-1/4	2-15/16	C22728	C22979	—

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# Jobber Length

## General Purpose Jobber Length (continued)

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1899 Black Oxide	Style 1898 Bright	Style 1898T TiN
9/32	.2812	7.14	4-1/4	2-15/16	C22729	C23009	C19174
L	.2900	7.37	4-1/4	2-15/16	C22730	C22980	C19199
M	.2950	7.49	4-3/8	3-1/16	C22731	C22981	—
19/64	.2969	7.54	4-3/8	3-1/16	C22732	C23010	C19175
N	.3020	7.67	4-3/8	3-1/16	C22733	C22982	C19200
5/16	.3125	7.94	4-1/2	3-3/16	C22734	C23011	C19176
O	.3160	8.03	4-1/2	3-3/16	C22735	C22983	C19201
P	.3230	8.20	4-5/8	3-5/16	C22736	C22984	—
21/64	.3281	8.33	4-5/8	3-5/16	C22737	C23012	C19177
Q	.3320	8.43	4-3/4	3-7/16	C22738	C22985	C19202
R	.3390	8.61	4-3/4	3-7/16	C22739	C22986	C19203
11/32	.3438	8.73	4-3/4	3-7/16	C22740	C23013	C19178
S	.3480	8.84	4-7/8	3-1/2	C22741	C22987	—
T	.3580	9.09	4-7/8	3-1/2	C22742	C22988	C19204
23/64	.3594	9.13	4-7/8	3-1/2	C22743	C23014	C19179
U	.3680	9.35	5	3-5/8	C22744	C22989	C19205
3/8	.3750	9.53	5	3-5/8	C22745	C23015	C19180
V	.3770	9.58	5	3-5/8	C22746	C22990	—
W	.3860	9.80	5-1/8	3-3/4	C22747	C22991	C19206
25/64	.3906	9.92	5-1/8	3-3/4	C22505	C23016	C19181
X	.3970	10.08	5-1/8	3-3/4	C22748	C22992	—
Y	.4040	10.26	5-1/4	3-7/8	C22749	C22993	—
13/32	.4062	10.32	5-1/4	3-7/8	C22506	C23017	C19182
Z	.4130	10.49	5-1/4	3-7/8	C22750	C22994	—
27/64	.4219	10.72	5-3/8	3-15/16	C22507	C23018	C19183
7/16	.4375	11.11	5-1/2	4-1/16	C22751	C23019	C19184
29/64	.4531	11.51	5-5/8	4-3/16	C22508	C23020	C19185
15/32	.4688	11.91	5-3/4	4-5/16	C22753	C23021	C19186
31/64	.4844	12.30	5-7/8	4-3/8	C22755	C23022	C19187
1/2	.5000	12.70	6	4-1/2	C22757	C23023	C19188

### INCH SIZES with 3/8" REDUCED SHANKS

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1900 Black Oxide	Style 1808 Bright
25/64	.3906	9.92	5-1/8	3-3/4	C69369	C20621
13/32	.4062	10.32	5-1/4	3-7/8	C69370	C20622
27/64	.4219	10.72	5-3/8	3-15/16	C69371	C20623
7/16	.4375	11.11	5-1/2	4-1/16	C69372	C20624
29/64	.4531	11.51	5-5/8	4-3/16	C69373	C20625
15/32	.4688	11.91	5-3/4	4-5/16	C69374	C20626
31/64	.4844	12.30	5-7/8	4-3/8	C69375	C20627
1/2	.5000	12.70	6	4-1/2	C69376	C20628

# Jobber Length

## General Purpose Jobber Length (continued)

### METRIC SIZES

Drill Dia.	Decimal Equiv.	Overall Length	Flute Length	Style 1899 Black Oxide	Style 1898 Bright	Style 1898T TiN
0.35	.0138	19	4	C22780	—	—
0.4	.0157	20	5	C22781	C01802	—
0.45	.0177	20	5	C22782	—	—
0.5	.0197	22	6	C22783	—	—
0.55	.0217	24	7	C22784	—	—
0.6	.0236	24	7	C22785	C01815	—
0.65	.0256	26	8	C22786	—	—
0.7	.0276	28	9	C22787	—	—
0.75	.0295	28	9	C22788	—	—
0.8	.0315	30	10	C22789	—	—
0.85	.0335	30	10	C22790	—	—
0.9	.0354	32	11	C22791	—	—
0.95	.0374	32	11	C22792	—	—
1.0	.0394	34	12	C22793	C62793	C24325
1.05	.0413	34	12	C22794	C62794	—
1.1	.0433	36	14	C22795	C62795	—
1.15	.0453	36	14	C22796	C62796	—
1.2	.0472	38	16	C22797	C62797	C24326
1.25	.0492	38	16	C22798	C62798	—
1.3	.0512	38	16	C22799	C62799	—
1.35	.0531	40	18	C22800	C62800	—
1.4	.0551	40	18	C22801	C62801	—
1.45	.0571	40	18	C22802	C62802	—
1.5	.0591	40	18	C22803	C62803	C24327
1.55	.0610	43	20	C22804	C62804	—
1.6	.0630	43	20	C22805	C62805	C24306
1.65	.0665	43	20	C22806	C62806	—
1.7	.0669	43	20	C22807	C62807	—
1.75	.0689	46	22	C22808	C62808	—
1.8	.0709	46	22	C22809	C62809	—
1.85	.0728	46	22	C22810	C62810	—
1.9	.0748	46	22	C22811	C62811	—
1.95	.0768	49	24	C22812	C62812	—
2	.0787	49	24	C22813	C62813	C24328
2.05	.0807	49	24	C22814	C62814	—
2.1	.0827	49	24	C22815	C62815	—
2.15	.0846	53	27	C22816	C62816	—
2.2	.0866	53	27	C22817	C62817	—
2.25	.0886	53	27	C22818	C62818	—
2.3	.0906	53	27	C22819	C62819	C24329
2.35	.0925	53	27	C22820	C62820	—
2.4	.0945	57	30	C22821	C62821	C24330
2.45	.0965	57	30	C22822	C62822	—
2.5	.0984	57	30	C22823	C62823	C24331
2.6	.1024	57	30	C22824	C62824	—
2.7	.1063	61	33	C22825	C62825	C24332
2.75	.1082	61	33	C01112	—	—
2.8	.1102	61	33	C22826	C62826	C24333
2.9	.1142	61	33	C22827	C62827	C24334
3	.1181	61	33	C22828	C62828	C24335
3.1	.1220	65	36	C22829	C62829	C24336
3.2	.1260	65	36	C22830	C62830	C24337

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Jobber Length

General Purpose Jobber Length (continued)

METRIC SIZES

Drill Dia.	Decimal Equiv.	Overall Length	Flute Length	Style 1899 Black Oxide	Style 1898 Bright	Style 1898T TiN
3.25	.1280	65	36	C01125	C01912	—
3.3	.1299	65	36	C22831	C62831	C24338
3.4	.1339	70	39	C22832	C62832	—
3.5	.1378	70	39	C22833	C62833	C24339
3.6	.1417	70	39	C22834	C62834	C24340
3.7	.1457	70	39	C22835	C62835	C24341
3.75	.1476	70	39	C01137	C01924	—
3.8	.1496	75	43	C22836	C62836	C24342
3.9	.1535	75	43	C22837	C62837	—
4	.1575	75	43	C22838	C62838	C24343
4.1	.1614	75	43	C22839	C62839	C24344
4.2	.1654	75	43	C22840	C62840	C24345
4.25	.1673	75	43	C01338	C01938	—
4.3	.1693	80	47	C22841	C62841	—
4.4	.1732	80	47	C22842	C62842	—
4.5	.1772	80	47	C22843	C62843	C24346
4.6	.1811	80	47	C22844	C62844	C24347
4.7	.1850	80	47	C22845	C62845	—
4.75	.1870	80	47	C01164	—	—
4.8	.1890	86	52	C22846	C62846	C24348
4.9	.1929	86	52	C22847	C62847	C24349
5	.1969	86	52	C22848	C62848	C24350
5.1	.2008	86	52	C22849	C62849	C24351
5.2	.2047	86	52	C22850	C62850	C24352
5.25	.2066	86	52	C01180	—	—
5.3	.2087	86	52	C22851	C62851	—
5.4	.2126	93	57	C22852	C62852	—
5.5	.2165	93	57	C22853	C62853	C24353
5.6	.2205	93	57	C22854	C62854	—
5.7	.2244	93	57	C22855	C62855	—
5.75	.2263	93	57	C01190	—	—
5.8	.2283	93	57	C22856	C62856	—
5.9	.2323	93	57	C22857	C62857	C24354
6	.2362	93	57	C22858	C62858	C24355
6.1	.2402	101	63	C22859	C62859	—
6.2	.2441	101	63	C22860	C62860	—
6.25	.2460	101	63	C01202	—	—
6.3	.2480	101	63	C22861	C62861	—
6.4	.2520	101	63	C22862	C62862	C24356
6.5	.2559	101	63	C22863	C62863	C24357
6.6	.2598	101	63	C22864	C62864	C24358
6.7	.2638	101	63	C22865	C62865	C24359
6.75	.2657	109	69	C01213	—	—
6.8	.2677	109	69	C22866	C62866	C24360
6.9	.2717	109	69	C22867	C62867	C24361
7	.2756	109	69	C22868	C62868	C24362
7.1	.2795	109	69	C22869	C62869	—
7.2	.2835	109	69	C22870	C62870	C24363
7.25	.2854	109	69	C01223	—	—
7.3	.2874	109	69	C22871	C62871	C24317

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Customer Service: 800.348.2885

Jobber Length

General Purpose Jobber Length (continued)

METRIC SIZES

Drill Dia.	Decimal Equiv.	Overall Length	Flute Length	Style 1899 Black Oxide	Style 1898 Bright	Style 1898T TiN
7.4	.2913	109	69	C22872	C62872	—
7.5	.2953	109	69	C22873	C62873	C24364
7.6	.2992	117	75	C22874	C62874	—
7.7	.3031	117	75	C22875	C62875	—
7.75	.3051	117	75	C01234	—	—
7.8	.3071	117	75	C22876	C62876	—
7.9	.3110	117	75	C22877	C62877	—
8	.3150	117	75	C22878	C62878	C24365
8.1	.3189	117	75	C22879	C62879	—
8.2	.3228	117	75	C22880	C62880	—
8.25	.3248	117	75	C01243	—	—
8.3	.3268	117	75	C22881	C62881	C24366
8.4	.3307	117	75	C22882	C62882	—
8.5	.3346	117	75	C22883	C62883	C24367
8.6	.3386	125	81	C22884	C62884	—
8.7	.3425	125	81	C22885	C62885	—
8.75	.3444	125	81	C01253	—	—
8.8	.3465	125	81	C22886	C62886	—
8.9	.3504	125	81	C22887	C62887	—
9	.3543	125	81	C22888	C62888	C24368
9.1	.3583	125	81	C22889	C62889	—
9.2	.3622	125	81	C22890	C62890	—
9.25	.3641	125	81	C01262	—	—
9.3	.3661	125	81	C22891	C62891	—
9.4	.3701	125	81	C22892	C62892	—
9.5	.3740	125	81	C22893	C62893	C24369
9.6	.3780	133	87	C22894	C62894	—
9.7	.3819	133	87	C22895	C62895	—
9.8	.3858	133	87	C22896	C62896	—
9.9	.3898	133	87	C22897	C62897	—
10	.3937	133	87	C22898	C62898	C24370
10.1	.3976	133	87	C22941	—	—
10.2	.4016	133	87	C22899	C62899	C24371
10.25	.4035	133	87	C22942	—	—
10.4	.4094	133	87	C22944	—	—
10.5	.4134	133	87	C22900	C62900	C24372
10.7	.4212	142	94	C22947	C02070	—
10.8	.4252	142	94	C22901	C62901	C24373
11	.4331	142	94	C22902	C62902	C24374
11.1	.4370	142	94	C22951	C02073	—
11.2	.4409	142	94	C22903	C62903	—
11.4	.4488	142	94	C22954	—	—
11.5	.4528	142	94	C22904	C62904	C24375
11.8	.4646	142	94	C22905	C62905	C24376
12	.4724	151	101	C22906	C62906	C24377
12.2	.4803	151	101	C22907	C62907	—
12.5	.4921	151	101	C22908	C62908	C24378
12.8	.5039	151	101	C22909	C62909	—
13	.5118	151	101	C22910	C62910	C24379
13.2	.5197	161	101	C22911	C62911	—

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Customer Service: 800.348.2885



# Jobber Length

## General Purpose Jobber Length (continued)

### METRIC SIZES

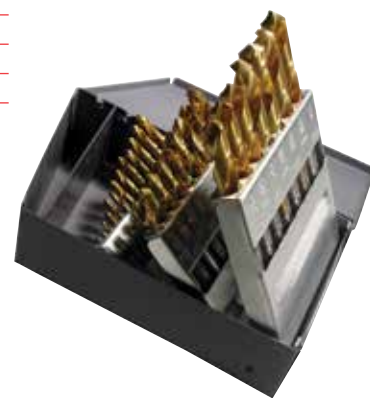
Drill Dia.	Decimal Equiv.	Overall Length	Flute Length	Style 1899 Black Oxide	Style 1898 Bright	Style 1898T TiN
13.5	.5315	160	108	C22912	C62912	—
13.8	.5433	160	108	C22913	C62913	—
14	.5512	160	108	C22914	C62914	—
14.25	.5610	169	114	C22915	C62915	—
14.5	.5709	169	114	C22916	C62916	—
14.75	.5807	169	114	C22917	C62917	—
15	.5906	169	114	C22918	C62918	—
15.25	.6004	178	120	C22919	—	—
15.5	.6102	178	120	C22920	C62920	—
15.75	.6201	178	120	C22921	C62921	—
16	.6299	178	120	C22922	C62922	—
16.25	.6398	184	125	C22923	C62923	—
16.5	.6496	184	125	C22924	C62924	—
16.75	.6594	184	125	C22925	—	—
17	.6693	184	125	C22926	C62926	—
17.25	.6791	191	130	C22927	—	—
17.5	.6890	191	130	C22928	C62928	—
18	.7086	191	130	C22929	C62929	—
18.5	.7283	198	135	C22930	—	—
19	.7480	198	135	C22931	C62931	—
19.5	.7677	205	140	C22932	—	—
20	.7874	205	140	C22933	—	—

### SETS in METAL CASE

Drill Sizes	No. of Pieces	Style 1899 Black Oxide	Style 1900 Blk 3/8" Shanks	Style 1898 Bright	Style 1898T TiN-Coated
1/16" – 3/8" x 1/32"	11	C21101	—	C21100	—
1/16" – 1/4" x 1/64"	13	C21105	—	C21104	—
1/16" – 1/2" x 1/32"	15	C21109	C21156	C21108	C19210
1/16" – 3/8" x 1/64"	21	C21114	—	C21113	—
1/16" – 1/2" x 1/64"	29	C21118	C21159	C21117	C19211
A – Z	26	C21158	—	—	—
#1 – #60	60	C21123	—	C21122	—
1/16" – 1/2" x 1/64", A to Z, #1 – #60	115	C21127	—	C21126	—
1mm – 6mm x 0.5mm	11	C21130	—	—	—
1mm – 10mm x 0.5mm	19	—	—	—	C24380
1mm – 13mm x 1mm	25	C21131	—	C18127	—



13-piece set C21105



29-piece set C19211



# Jobber Length

## General Purpose Left-Hand Jobber Length

### FEATURES

- 118° point
- HSS construction with left-hand helix, left-hand cut general-purpose geometry
- Bright finish for nonferrous and low-tensile steel applications
- For general-purpose drilling and maintenance applications



Style 1898L Bright Finish

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1898L Bright
3/64	.0469	1.19	1-3/4	3/4	C18400
1/16	.0625	1.59	1-7/8	7/8	C18401
5/64	.0781	1.98	2	1	C18402
3/32	.0938	2.38	2-1/4	1-1/4	C18403
7/64	.1094	2.78	2-5/8	1-1/2	C18404
1/8	.1250	3.18	2-3/4	1-5/8	C18405
9/64	.1406	3.57	2-7/8	1-3/4	C18406
5/32	.1562	3.97	3-1/8	2	C18407
11/64	.1719	4.37	3-1/4	2-1/8	C18408
3/16	.1875	4.76	3-1/2	2-5/16	C18409
13/64	.2031	5.16	3-5/8	2-7/16	C18410
7/32	.2188	5.56	3-3/4	2-1/2	C18411
15/64	.2344	5.95	3-7/8	2-5/8	C18412
1/4	.2500	6.35	4	2-3/4	C18413
17/64	.2656	6.75	4-1/8	2-7/8	C18414
9/32	.2812	7.14	4-1/4	2-15/16	C18415
19/64	.2969	7.54	4-3/8	3-1/16	C18416
5/16	.3125	7.94	4-1/2	3-3/16	C18417
21/64	.3281	8.33	4-5/8	3-5/16	C18418
11/32	.3438	8.73	4-3/4	3-7/16	C18419
23/64	.3594	9.13	4-7/8	3-1/2	C18420
3/8	.3750	9.53	5	3-5/8	C18421
25/64	.3906	9.92	5-1/8	3-3/4	C18422
13/32	.4062	10.32	5-1/4	3-7/8	C18423
27/64	.4219	10.72	5-3/8	3-15/16	C18424
7/16	.4375	11.11	5-1/2	4-1/16	C18425
29/64	.4531	11.51	5-5/8	4-3/16	C18426
15/32	.4688	11.95	5-3/4	4-5/16	C18427
31/64	.4844	12.30	5-7/8	4-3/8	C18428
1/2	.5000	12.70	6	4-1/2	C18429



# Jobber Length

## Heavy Duty Jobber Length

### FEATURES

- 135° split point is self-centering, for reduced thrust and easier penetration; preferred for stainless steels
- HSS substrate with heavy duty geometry
- Three flats on sizes above 11/64" for tighter chucking
- Black oxide finish for increased lubricity and better wear resistance

- Black and gold finish for enhanced operation and long drill life
- Selected sizes available with 3/8" reduced shanks (see page 12)
- For general purpose drilling and maintenance applications
- Nitride surface treatment offers tough, protective layer for increased hardness and longer tool life



Style 1801 Black Oxide



Style 1809 3/8" Reduced Shank Black Oxide



Style 1878 Black and Gold w/ Nitride



Style 1879 3/8" Reduced Shank Black and Gold

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1801 Black Oxide	Style 1878 Black and Gold
60*	.0400	1.02	1-5/8	11/16	C23154	C18113
59*	.0410	1.04	1-5/8	11/16	C23155	C18112
58*	.0420	1.07	1-5/8	11/16	C23156	C18111
57*	.0430	1.09	1-3/4	3/4	C23157	C18110
56*	.0465	1.18	1-3/4	3/4	C23158	C18109
3/64*	.0469	1.19	1-3/4	3/4	C23214	-
55*	.0520	1.32	1-7/8	7/8	C23159	C18108
54*	.0550	1.40	1-7/8	7/8	C23160	C18107
53*	.0595	1.51	1-7/8	7/8	C23161	C18106
1/16	.0625	1.59	1-7/8	7/8	C23125	C18000
52	.0635	1.61	1-7/8	7/8	C23162	C18105
51	.0670	1.70	2	1	C23163	C18104
50	.0700	1.78	2	1	C23164	C18103
49	.0730	1.85	2	1	C23165	C18102
48	.0760	1.93	2	1	C23166	C18101
5/64	.0781	1.98	2	1	C23126	C18001
47	.0785	1.99	2	1	C23167	C18100
46	.0810	2.06	2-1/8	1-1/8	C23168	C18099
45	.0820	2.08	2-1/8	1-1/8	C23169	C18098
44	.0860	2.18	2-1/8	1-1/8	C23170	C18097
43	.0890	2.26	2-1/4	1-1/4	C23171	C18096
42	.0935	2.37	2-1/4	1-1/4	C23172	C18095
3/32	.0938	2.38	2-1/4	1-1/4	C23127	C18002
41	.0960	2.44	2-3/8	1-3/8	C23173	C18094
40	.0980	2.49	2-3/8	1-3/8	C23174	C18093
39	.0995	2.53	2-3/8	1-3/8	C23175	C18092
38	.1015	2.58	2-1/2	1-7/16	C23176	C18091
37	.1040	2.64	2-1/2	1-7/16	C23177	C18090
36	.1065	2.71	2-1/2	1-7/16	C23178	C18089
7/64	.1094	2.78	2-5/8	1-1/2	C23128	C18003
35	.1100	2.79	2-5/8	1-1/2	C23179	C18088
34	.1110	2.82	2-5/8	1-1/2	C23180	C18087
33	.1130	2.87	2-5/8	1-1/2	C23181	C18086
32	.1160	2.95	2-3/4	1-5/8	C23182	C18085
31	.1200	3.05	2-3/4	1-5/8	C23183	C18084
1/8	.1250	3.18	2-3/4	1-5/8	C23129	C18004



\*Not split point.

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Customer Service: 800.348.2885

# Jobber Length

## Heavy Duty Jobber Length (continued)

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1801 Black Oxide	Style 1878 Black and Gold
30	.1285	3.26	2-3/4	1-5/8	C23184	C18083
29	.1360	3.45	2-7/8	1-3/4	C23185	C18082
28	.1405	3.57	2-7/8	1-3/4	C23186	C18081
9/64	.1406	3.57	2-7/8	1-3/4	C23130	C18005
27	.1440	3.66	3	1-7/8	C23187	C18080
26	.1470	3.73	3	1-7/8	C23188	C18079
25	.1495	3.80	3	1-7/8	C23189	C18078
24	.1520	3.86	3-1/8	2	C23190	C18077
23	.1540	3.91	3-1/8	2	C23191	C18076
5/32	.1562	3.97	3-1/8	2	C23131	C18006
22	.1570	3.99	3-1/8	2	C23192	C18075
21	.1590	4.04	3-1/4	2-1/8	C23193	C18074
20	.1610	4.09	3-1/4	2-1/8	C23194	C18073
19	.1660	4.22	3-1/4	2-1/8	C23195	C18072
18	.1695	4.31	3-1/4	2-1/8	C23196	C18071
11/64	.1719	4.37	3-1/4	2-1/8	C23132	C18007
17	.1730	4.39	3-3/8	2-3/16	C23197	C18070
16	.1770	4.50	3-3/8	2-3/16	C23198	C18069
15	.1800	4.57	3-3/8	2-3/16	C23199	C18068
14	.1820	4.62	3-3/8	2-3/16	C23200	C18067
13	.1850	4.70	3-1/2	2-5/16	C23201	C18066
3/16	.1875	4.76	3-1/2	2-5/16	C23133	C18008
12	.1890	4.80	3-1/2	2-5/16	C23202	C18065
11	.1910	4.85	3-1/2	2-5/16	C23203	C18064
10	.1935	4.91	3-5/8	2-7/16	C23204	C18063
9	.1960	4.98	3-5/8	2-7/16	C23205	C18062
8	.1990	5.05	3-5/8	2-7/16	C23206	C18061
7	.2010	5.11	3-5/8	2-7/16	C23207	C18060
13/64	.2031	5.16	3-5/8	2-7/16	C23134	C18009
6	.2040	5.18	3-3/4	2-1/2	C23208	C18059
5	.2055	5.22	3-3/4	2-1/2	C23209	C18058
4	.2090	5.31	3-3/4	2-1/2	C23210	C18057
3	.2130	5.41	3-3/4	2-1/2	C23211	C18056
7/32	.2188	5.56	3-3/4	2-1/2	C23135	C18010
2	.2210	5.61	3-7/8	2-5/8	C23212	C18055
1	.2280	5.79	3-7/8	2-5/8	C23213	C18054
A	.2340	5.94	3-7/8	2-5/8	C23100	C18029
15/64	.2344	5.95	3-7/8	2-5/8	C23136	C18011
B	.2380	6.05	4	2-3/4	C23101	C18030
C	.2420	6.15	4	2-3/4	C23102	C18031
D	.2460	6.25	4	2-3/4	C23103	C18032
1/4, E	.2500	6.35	4	2-3/4	C23137	C18012
F	.2570	6.53	4-1/8	2-7/8	C23104	C18033
G	.2610	6.63	4-1/8	2-7/8	C23105	C18034
17/64	.2656	6.75	4-1/8	2-7/8	C23138	C18013
H	.2660	6.76	4-1/8	2-7/8	C23106	C18035
I	.2720	6.91	4-1/8	2-7/8	C23107	C18036
J	.2770	7.04	4-1/8	2-7/8	C23108	C18037
K	.2810	7.14	4-1/4	2-15/16	C23109	C18038
9/32	.2812	7.14	4-1/4	2-15/16	C23139	C18014

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Customer Service: 800.348.2885

# Jobber Length

## Heavy Duty Jobber Length (continued)

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1801 Black Oxide	Style 1878 Black and Gold
L	.2900	7.37	4-1/4	2-15/16	C23110	C18039
M	.2950	7.49	4-3/8	3-1/16	C23111	C18040
19/64	.2969	7.54	4-3/8	3-1/16	C23140	C18015
N	.3020	7.67	4-3/8	3-1/16	C23112	C18041
5/16	.3125	7.94	4-1/2	3-3/16	C23141	C18016
O	.3160	8.03	4-1/2	3-3/16	C23113	C18042
P	.3230	8.20	4-5/8	3-5/16	C23114	C18043
21/64	.3281	8.33	4-5/8	3-5/16	C23142	C18017
Q	.3320	8.43	4-3/4	3-7/16	C23115	C18044
R	.3390	8.61	4-3/4	3-7/16	C23116	C18045
11/32	.3438	8.73	4-3/4	3-7/16	C23143	C18018
S	.3480	8.84	4-7/8	3-1/2	C23117	C18046
T	.3580	9.09	4-7/8	3-1/2	C23118	C18047
23/64	.3594	9.13	4-7/8	3-1/2	C23144	C18019
U	.3680	9.35	5	3-5/8	C23119	C18048
3/8	.3750	9.53	5	3-5/8	C23145	C18020
V	.3770	9.58	5	3-5/8	C23120	C18049
W	.3860	9.80	5-1/8	3-3/4	C23121	C18050
25/64	.3906	9.92	5-1/8	3-3/4	C23146	C18021
X	.3970	10.08	5-1/8	3-3/4	C23122	C18051
Y	.4040	10.26	5-1/4	3-7/8	C23123	C18052
13/32	.4062	10.32	5-1/4	3-7/8	C23147	C18022
Z	.4130	10.49	5-1/4	3-7/8	C23124	C18053
27/64	.4219	10.72	5-3/8	3-15/16	C23148	C18023
7/16	.4375	11.11	5-1/2	4-1/16	C23149	C18024
29/64	.4531	11.51	5-5/8	4-3/16	C23150	C18025
15/32	.4688	11.91	5-3/4	4-5/16	C23151	C18026
31/64	.4844	12.30	5-7/8	4-3/8	C23152	C18027
1/2	.5000	12.70	6	4-1/2	C23153	C18028

### INCH SIZES with 3/8" REDUCED SHANKS

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1809 Black Oxide	Style 1879 Black and Gold
25/64	.3906	9.92	5-1/8	3-3/4	C20631	C18114
13/32	.4062	10.32	5-1/4	3-7/8	C20632	C18115
27/64	.4219	10.72	5-3/8	3-15/16	C20633	C18116
7/16	.4375	11.11	5-1/2	4-1/16	C20634	C18117
29/64	.4531	11.51	5-5/8	4-3/16	C20635	C18118
15/32	.4688	11.91	5-3/4	4-5/16	C20636	C18119
31/64	.4844	12.30	5-7/8	4-3/8	C20637	C18120
1/2	.5000	12.70	6	4-1/2	C20638	C18121
17/32	.5312	13.49	6-5/8	4-13/16	C20659	-
9/16	.5625	14.29	6-5/8	4-13/16	C20660	-
5/8	.6094	15.48	7-1/8	5-3/16	C20661	-
11/16	.6875	17.46	7-5/8	5-5/8	C20662	-

# Jobber Length

## Heavy Duty Jobber Length (continued)

### SETS

Drill Sizes	No. of Pieces	Style 1801 Black Oxide	Style 1878 Black & Gold	Bit Barrel™ Style 1878 Black & Gold	3/8" Shank Style 1879 Black & Gold
1/16" - 1/4" x 1/64"	13	C21157	C18123	-	-
1/16" - 1/2" x 1/32"	15	C21110	C18124	-	-
1/16" - 3/8" x 1/64"	21	C21115	-	-	-
1/16" - 1/2" x 1/64"	29	C21119	C18125	C18128	C18122
#1 - #60	60	C21124	-	-	-
1/16" - 1/2" x 1/64", A to Z, #1 - #60	115	C21128	-	-	-



Bit Barrel Set C18128

### Drill Tolerances

#### Drill Diameter Tolerances

Diameter Range (inches)	Plus (+) (inches)	Minus (-) (inches)
through 1/8	.0000	.0005
over 1/8 through 1/4	.0000	.0007
over 1/4 through 1/2	.0000	.0010
over 1/2 through 1	.0000	.0012
over 1 through 2	.0000	.0015
over 2 through 3-1/2	.0000	.0020

#### Drill Point Angle Tolerances

Diameter Range (inches)	Included Angle (degrees)	Tolerance (degrees)
1/16 through 1/2	118° / 135°	± 5°
over 1/2 through 1-1/2	118°	± 3°
over 1-1/2 through 3-1/2	118°	± 2°

#### Drill Overall Length and Flute

##### Length Tolerances

Diameter Range (inches)	Plus (+) (inches)	Minus (-) (inches)
#80 through 1/8	.1250	.0625
over 1/8 through 1/2	.1250	.1250
over 1/2 through 1	.2500	.1250
over 1 through 2	.2500	.2500
over 2 through 3-1/2	.3750	.3750

#### Drill Lip Height Tolerances

Diameter Range (inches)	Total Indicator Variation (inches)
1/16 through 1/8	.0020
over 1/8 through 1/4	.0030
over 1/4 through 1/2	.0040
over 1/2 through 1	.0050
over 1 through 3-1/2	.0060



# Jobber Length

## Heavy Duty Parabolic Flute Jobber Length

### FEATURES

- Aerospace-style 135° split point reduces drill “walking”
- Parabolic flute form and rounded heel for increased chip removal rates
- Optimized web and point geometry to maximize penetration
- Faster penetration rates than conventional HSS heavy duty jobber drills
- HSS substrate
- Black and gold finish for increased lubricity
- TiN coated finish for longer tool life
- For a wide range of material applications
- Selected sizes available with 3/8" reduced shanks (see page 15)



### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1872 Black & Gold	Style 1872TN TiN
1/16	.0625	1.59	1-7/8	7/8	C18430	C18630
5/64	.0781	1.98	2	1	C18431	C18631
3/32	.0938	2.38	2-1/4	1-1/4	C18432	C18632
41	.0960	2.44	2-3/8	1-3/8	C18541	—
40	.0980	2.49	2-3/8	1-3/8	C18540	—
39	.0995	2.53	2-3/8	1-3/8	C18539	—
38	.1015	2.58	2-1/2	1-7/16	C18538	—
37	.1040	2.64	2-1/2	1-7/16	C18537	—
36	.1065	2.71	2-1/2	1-7/16	C18536	—
7/64	.1094	2.78	2-5/8	1-1/2	C18433	C18633
35	.1100	2.79	2-5/8	1-1/2	C18535	—
34	.1110	2.82	2-5/8	1-1/2	C18534	—
33	.1130	2.87	2-5/8	1-1/2	C18533	—
32	.1160	2.95	2-3/4	1-5/8	C18532	—
31	.1200	3.05	2-3/4	1-5/8	C18531	—
1/8	.1250	3.18	2-3/4	1-5/8	C18434	C18634
30	.1285	3.26	2-3/4	1-5/8	C18530	—
29	.1360	3.45	2-7/8	1-3/4	C18529	—
28	.1405	3.57	2-7/8	1-3/4	C18528	—
9/64	.1406	3.57	2-7/8	1-3/4	C18435	C18635
27	.1440	3.66	3	1-7/8	C18527	—
26	.1470	3.73	3	1-7/8	C18526	—
25	.1495	3.80	3	1-7/8	C18525	—
24	.1520	3.86	3-1/8	2	C18524	—
23	.1540	3.91	3-1/8	2	C18523	—
5/32	.1562	3.97	3-1/8	2	C18436	C18636
22	.1570	3.99	3-1/8	2	C18522	—
21	.1590	4.04	3-1/4	2-1/8	C18521	—
20	.1610	4.09	3-1/4	2-1/8	C18520	—
19	.1660	4.22	3-1/4	2-1/8	C18519	—
18	.1695	4.31	3-1/4	2-1/8	C18518	—
11/64	.1719	4.37	3-1/4	2-1/8	C18437	C18637
17	.1730	4.39	3-3/8	2-3/16	C18517	—
16	.1770	4.50	3-3/8	2-3/16	C18516	—

continued on next page



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# Jobber Length

## Heavy Duty Parabolic Flute Jobber Length (continued)

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1872 Black & Gold	Style 1872TN TiN
15	.1800	4.57	3-3/8	2-3/16	C18515	—
14	.1820	4.62	3-3/8	2-3/16	C18514	—
13	.1850	4.70	3-1/2	2-5/16	C18513	—
3/16	.1875	4.76	3-1/2	2-5/16	C18438	C18638
12	.1890	4.80	3-1/2	2-5/16	C18512	—
11	.1910	4.85	3-1/2	2-5/16	C18511	—
10	.1935	4.92	3-5/8	2-7/16	C18510	—
9	.1960	4.98	3-5/8	2-7/16	C18509	—
8	.1990	5.06	3-5/8	2-7/16	C18508	—
7	.2010	5.11	3-5/8	2-7/16	C18507	—
13/64	.2031	5.16	3-5/8	2-7/16	C18439	C18639
6	.2040	5.18	3-3/4	2-1/2	C18506	—
5	.2055	5.22	3-3/4	2-1/2	C18505	—
4	.2090	5.31	3-3/4	2-1/2	C18504	—
3	.2130	5.41	3-3/4	2-1/2	C18503	—
7/32	.2188	5.56	3-3/4	2-1/2	C18440	C18640
2	.2210	5.61	3-7/8	2-5/8	C18502	—
1	.2280	5.79	3-7/8	2-5/8	C18501	—
15/64	.2344	5.95	3-7/8	2-5/8	C18441	C18641
1/4	.2500	6.35	4	2-3/4	C18442	C18642
F	.2570	6.53	4-1/8	2-7/8	C18474	—
17/64	.2656	6.75	4-1/8	2-7/8	C18443	C18643
9/32	.2812	7.14	4-1/4	2-15/16	C18444	C18644
19/64	.2969	7.54	4-3/8	3-1/16	C18445	C18645
5/16	.3125	7.94	4-1/2	3-3/16	C18446	C18646
21/64	.3281	8.33	4-5/8	3-5/16	C18447	C18647
Q	.3320	8.43	4-3/4	3-7/16	C18485	—
11/32	.3438	8.73	4-3/4	3-7/16	C18459	C18648
23/64	.3594	9.13	4-7/8	3-1/2	C18449	C18649
3/8	.3750	9.53	5	3-5/8	C18450	C18650
25/64	.3906	9.92	5-1/8	3-3/4	C18451	C18651
13/32	.4062	10.32	5-1/4	3-7/8	C18452	C18652
27/64	.4219	10.72	5-3/8	3-15/16	C18453	C18653
7/16	.4375	11.11	5-1/2	4-1/16	C18454	C18654
29/64	.4531	11.51	5-5/8	4-3/16	C18455	C18655
15/32	.4688	11.91	5-3/4	4-5/16	C18456	C18656
31/64	.4844	12.30	5-7/8	4-3/8	C18457	C18657
1/2	.5000	12.70	6	4-1/2	C18458	C18658

### INCH SIZES with 3/8" REDUCED SHANKS

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1873 Black & Gold
25/64	.3906	9.92	5-1/8	3-3/4	C18710
13/32	.4062	10.32	5-1/4	3-7/8	C18711
27/64	.4219	10.72	5-3/8	3-15/16	C18712
7/16	.4375	11.11	5-1/2	4-1/16	C18713
29/64	.4531	11.51	5-5/8	4-3/16	C18714
15/32	.4688	11.91	5-3/4	4-5/16	C18715
31/64	.4844	12.30	5-7/8	4-3/8	C18716
1/2	.5000	12.70	6	4-1/2	C18717

metric sizes listed on next page



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# Jobber Length

## Heavy Duty Parabolic Flute Jobber Length (continued)

METRIC SIZES

Drill Dia.	Decimal Equiv.	Overall Length	Flute Length	Style 1872 Black & Gold	Style 1872TN TiN
1.0*	.0394	34	12	C18570	C18670
1.5*	.0591	40	18	C18573	C18671
1.6	.0630	43	20	C18574	—
1.65	.0650	43	20	C18575	—
1.75	.0689	46	22	C18576	—
1.8	.0709	46	22	C18577	—
2.0	.0787	49	24	C18578	C18672
2.05	.0807	49	24	C18579	—
2.3	.0906	53	27	C18580	—
2.5	.0984	57	30	C18581	C18673
2.6	.1024	57	30	C18582	—
2.9	.1142	61	33	C18583	—
3.0	.1181	61	33	C18584	C18674
3.2	.1260	65	36	C18585	—
3.3	.1299	65	36	C18586	C18675
3.5	.1378	70	39	C18587	C18676
3.7	.1457	70	39	C18588	—
4.0	.1575	75	43	C18589	C18677
4.1	.1614	75	43	C18590	—
4.2	.1654	75	43	C18591	C18678
4.3	.1693	80	47	C18722	—
4.5	.1772	80	47	C18592	C18679
4.8	.1890	86	52	C18723	—
5.0	.1969	86	52	C18593	C18680
5.1	.2008	86	52	C18724	—
5.2	.2047	86	52	C18725	—
5.5	.2165	93	57	C18594	C18681
5.7	.2244	93	57	C18726	—
6.0	.2362	93	57	C18595	C18682
6.5	.2559	101	63	C18596	C18683
6.7	.2638	101	63	C18597	—
6.8	.2677	109	69	C18598	C18684
7.0	.2756	109	69	C18599	C18685
7.4	.2913	109	69	C18600	—
7.5	.2953	109	69	C18601	C18686
7.8	.3071	117	75	C18602	—
8.0	.3150	117	75	C18603	C18687
8.5	.3346	117	75	C18604	C18688
8.7	.3425	125	81	C18605	—
9.0	.3543	125	81	C18606	C18689
9.4	.3701	125	81	C18607	—
9.5	.3740	125	81	C18608	C18690
10.0	.3937	133	87	C18609	C18697
10.2	.4016	133	87	C18610	—
10.5	.4134	133	87	C18611	C18691
10.8	.4252	142	94	C18612	—
11.0	.4331	142	94	C18613	C18692
11.2	.4409	142	94	C18614	—
11.5	.4528	142	94	C18615	C18693
12.0	.4724	151	101	C18616	C18694
12.5	.4921	151	101	C18617	C18695
13.0	.5118	151	101	C18618	C18696

\*Not split point.

sets listed on next page



# Jobber Length

## Heavy Duty Parabolic Flute Jobber Length (continued)

SETS in METAL CASE

Drill Sizes	No. of Pieces	Style 1872 Black & Gold	Style 1872TN TiN-Coated	Style 1873 3/8" Shanks
1/16" – 1/4" x 1/64"	13	C18619	C18700	—
1/16" – 1/2" x 1/32"	15	C18620	C18701	C18719
1/16" – 3/8" x 1/64"	21	C18621	C18702	—
1/16" – 1/2" x 1/64"	29	C18622	C18703	C18718
1mm – 6mm x 0.5mm	11	C18626	C18704	—
1mm – 13mm x 1mm	25	C18628	C18706	—



29-piece Black & Gold Set, C18622

### Recommended Drill Speeds and Coolants – Ferrous Materials (see page 27 for Recommendations for Nonferrous Materials)

	Brinell	Surface Feet per Minute	Coolant	
Low Carbon Steel 85-125	80-95	Soluble Oil		
Medium Carbon Steel	125-175	70-85	Soluble Oil	
High Carbon Steel	175-225	45-65	Soluble Oil	
Steels Alloyed	Under 200	60-90	Soluble Oil	
	200-300	40-70	Soluble Oil	
	Over 300	20-30	Soluble Oil	
Steel Drop Forgings	330-370	30-40	Cutting Oil	
Heat Treated	370-420	20-30	Cutting Oil	
	Over 420	10-20	Cutting Oil	
Grey Cast Iron	Soft	125	140-150	Dry
	Medium	120-200	50-80	Soluble Oil
	Hard	Up to 350	25-40	Soluble Oil
Titanium Alloys				
	Ti-75A	300-440	50-60	Cutting Oil
	Ti-150A, RS-120	300-440	40-50	Cutting Oil
	Ti-140A, RC 130B	300-440	30-40	Cutting Oil
	Ti-6AL-4V	300-440	20-30	Cutting Oil
Stainless Steel				
	300 Series	120-200	20-40	Cutting Oil
	400 Series	200-300	40-70	Cutting Oil
	Martensitic 416, 420, F416 Plus K, 400F, 4165SE, 440F	135-185	40-50	Cutting Oil
	Precipitation Hardening	325-375	30	Cutting Oil
	Cast Stainless Steel	400-450	20	Cutting Oil
Heat Resisting Steels	175-225	10-25	Cutting Oil	
Nimonic Alloys	200-300	10-20	Cutting Oil	
Manganese 12-14% min	125-220	10-12	Cutting Oil	
Spring Steels	402	15-30	Soluble Oil	
Armor Plate	200-250	40	Soluble Oil	
	250-300	35	Soluble Oil	
	300-350	30	Cutting Oil	



# Jobber Length

## Cobalt Heavy Duty Jobber Length

### FEATURES

- 135° split point for faster, easier drill penetration
- Industrial-grade cobalt HSS construction
- Straw color finish
- Designed to drill tough, high-tensile materials and work-hardening materials like high-strength alloy steels, stainless steel, titanium, manganese steel, armor plate, and inconel.
- Selected sizes available with 3/8" reduced shanks (see page 20)



Style 1812 Straw Finish

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1802 Straw Finish
60*	.0400	1.02	1-5/8	11/16	C23374
59*	.0410	1.04	1-5/8	11/16	C23375
58*	.0420	1.07	1-5/8	11/16	C23376
57*	.0430	1.09	1-3/4	3/4	C23377
56*	.0465	1.18	1-3/4	3/4	C23378
55*	.0520	1.32	1-7/8	7/8	C23379
54*	.0550	1.40	1-7/8	7/8	C23380
53*	.0595	1.51	1-7/8	7/8	C23381
1/16	.0625	1.59	1-7/8	7/8	C23345
52	.0635	1.61	1-7/8	7/8	C23382
51	.0670	1.70	2	1	C23383
50	.0700	1.78	2	1	C23384
49	.0730	1.85	2	1	C23385
48	.0760	1.93	2	1	C23386
5/64	.0781	1.98	2	1	C23346
47	.0785	1.99	2	1	C23387
46	.0810	2.06	2-1/8	1-1/8	C23388
45	.0820	2.08	2-1/8	1-1/8	C23389
44	.0860	2.18	2-1/8	1-1/8	C23390
43	.0890	2.26	2-1/4	1-1/4	C23391
42	.0935	2.37	2-1/4	1-1/4	C23392
3/32	.0938	2.38	2-1/4	1-1/4	C23347
41	.0960	2.44	2-3/8	1-3/8	C23393
40	.0980	2.49	2-3/8	1-3/8	C23394
39	.0995	2.53	2-3/8	1-3/8	C23395
38	.1015	2.58	2-1/2	1-7/16	C23396
37	.1040	2.64	2-1/2	1-7/16	C23397
36	.1065	2.71	2-1/2	1-7/16	C23398
7/64	.1094	2.78	2-5/8	1-1/2	C23348
35	.1100	2.79	2-5/8	1-1/2	C23399
34	.1110	2.82	2-5/8	1-1/2	C23400
33	.1130	2.87	2-5/8	1-1/2	C23401
32	.1160	2.95	2-3/4	1-5/8	C23402
31	.1200	3.05	2-3/4	1-5/8	C23403
1/8	.1250	3.18	2-3/4	1-5/8	C23349
30	.1285	3.26	2-3/4	1-5/8	C23404
29	.1360	3.45	2-7/8	1-3/4	C23405
28	.1405	3.57	2-7/8	1-3/4	C23406

\*Not split point.

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# Jobber Length

## Cobalt Heavy Duty Jobber Length (continued)

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1802 Straw Finish
9/64	.1406	3.57	2-7/8	1-3/4	C23350
27	.1440	3.66	3	1-7/8	C23407
26	.1470	3.73	3	1-7/8	C23408
25	.1495	3.80	3	1-7/8	C23409
24	.1520	3.86	3-1/8	2	C23410
23	.1540	3.91	3-1/8	2	C23411
5/32	.1562	3.97	3-1/8	2	C23351
22	.1570	3.99	3-1/8	2	C23412
21	.1590	4.04	3-1/4	2-1/8	C23413
20	.1610	4.09	3-1/4	2-1/8	C23414
19	.1660	4.22	3-1/4	2-1/8	C23415
18	.1695	4.31	3-1/4	2-1/8	C23416
11/64	.1719	4.37	3-1/4	2-1/8	C23352
17	.1730	4.39	3-3/8	2-3/16	C23417
16	.1770	4.50	3-3/8	2-3/16	C23418
15	.1800	4.57	3-3/8	2-3/16	C23419
14	.1820	4.62	3-3/8	2-3/16	C23420
13	.1850	4.70	3-1/2	2-5/16	C23421
3/16	.1875	4.76	3-1/2	2-5/16	C23353
12	.1890	4.80	3-1/2	2-5/16	C23422
11	.1910	4.85	3-1/2	2-5/16	C23423
10	.1935	4.91	3-5/8	2-7/16	C23424
9	.1960	4.98	3-5/8	2-7/16	C23425
8	.1990	5.05	3-5/8	2-7/16	C23426
7	.2010	5.11	3-5/8	2-7/16	C23427
13/64	.2031	5.16	3-5/8	2-7/16	C23354
6	.2040	5.18	3-3/4	2-1/2	C23428
5	.2055	5.22	3-3/4	2-1/2	C23429
4	.2090	5.31	3-3/4	2-1/2	C23430
3	.2130	5.41	3-3/4	2-1/2	C23431
7/32	.2188	5.56	3-3/4	2-1/2	C23355
2	.2210	5.61	3-7/8	2-5/8	C23432
1	.2280	5.79	3-7/8	2-5/8	C23433
A	.2340	5.94	3-7/8	2-5/8	C23320
15/64	.2344	5.95	3-7/8	2-5/8	C23356
B	.2380	6.05	4	2-3/4	C23321
C	.2420	6.15	4	2-3/4	C23322
D	.2460	6.25	4	2-3/4	C23323
1/4, E	.2500	6.35	4	2-3/4	C23357
F	.2570	6.53	4-1/8	2-7/8	C23324
G	.2610	6.63	4-1/8	2-7/8	C23325
17/64	.2656	6.75	4-1/8	2-7/8	C23358
H	.2660	6.76	4-1/8	2-7/8	C23326
I	.2720	6.91	4-1/8	2-7/8	C23327
J	.2770	7.04	4-1/8	2-7/8	C23328
K	.2810	7.14	4-1/4	2-15/16	C23329
9/32	.2812	7.14	4-1/4	2-15/16	C23359
L	.2900	7.37	4-1/4	2-15/16	C23330
19/64	.2969	7.54	4-3/8	3-1/16	C23360
5/16	.3125	7.94	4-1/2	3-3/16	C23361

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# Jobber Length

## Cobalt Heavy Duty Jobber Length (continued)

### INCH SIZES

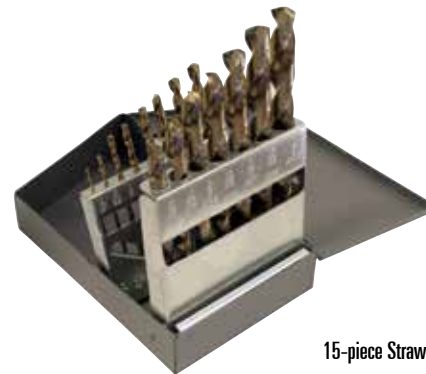
Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1802 Straw Finish
21/64	.3281	8.33	4-5/8	3-5/16	C23362
Q	.3320	8.43	4-3/4	3-7/16	C23335
R	.3390	8.61	4-3/4	3-7/16	C23336
11/32	.3438	8.73	4-3/4	3-7/16	C23363
23/64	.3594	9.13	4-7/8	3-1/2	C23364
U	.3680	9.35	5	3-5/8	C23339
3/8	.3750	9.53	5	3-5/8	C23365
V	.3770	9.58	5	3-5/8	C23340
W	.3860	9.80	5-1/8	3-3/4	C23341
25/64	.3906	9.92	5-1/8	3-3/4	C23366
13/32	.4062	10.32	5-1/4	3-7/8	C23367
27/64	.4219	10.72	5-3/8	3-15/16	C23368
7/16	.4375	11.11	5-1/2	4-1/16	C23369
29/64	.4531	11.51	5-5/8	4-3/16	C23370
15/32	.4688	11.91	5-3/4	4-5/16	C23371
31/64	.4844	12.30	5-7/8	4-3/8	C23372
1/2	.5000	12.70	6	4-1/2	C23373

### INCH SIZES with 3/8" REDUCED SHANKS

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1812 Straw Finish
25/64	.3906	9.92	5-1/8	3-3/4	C20651
13/32	.4063	10.32	5-1/4	3-7/8	C20652
27/64	.4219	10.72	5-3/8	3-15/16	C20653
7/16	.4375	11.11	5-1/2	4-1/16	C20654
29/64	.4531	11.51	5-5/8	4-3/16	C20655
15/32	.4688	11.91	5-3/4	4-5/16	C20656
31/64	.4844	12.30	5-7/8	4-3/8	C20657
1/2	.5000	12.70	6	4-1/2	C20658

### SETS in METAL CASE

Drill Sizes	No. of Pieces	Style 1802 Straw Finish
1/16" - 1/4" x 1/64"	13	C21107
1/16" - 1/2" x 1/32"	15	C21112
1/16" - 1/2" x 1/64"	29	C21121
#1 - #60	60	C21125
1/16" - 1/2" x 1/64", A to Z, #1 - #60	115	C21129



15-piece Straw Finish Set, C21112

metric sizes listed on next page



Customer Service: 800.348.2885

# Jobber Length

## Cobalt Heavy Duty Jobber Length (continued)

### METRIC SIZES

Drill Dia.	Decimal Equiv.	Overall Length	Flute Length	Style 1891 Straw Finish
1.0*	.0394	34	12	C18900
1.2*	.0472	38	16	C18902
1.5*	.0591	40	18	C18905
1.6	.0630	43	20	C18906
2.0	.0787	49	24	C18910
2.4	.0945	57	30	C18914
2.5	.0984	57	30	C18915
2.8	.1102	61	33	C18918
3.0	.1181	61	33	C18920
3.1	.1220	65	36	C18921
3.2	.1260	65	36	C18922
3.3	.1299	65	36	C18923
3.5	.1378	70	39	C18925
3.6	.1417	70	39	C18926
3.7	.1457	70	39	C18927
3.9	.1535	75	43	C18929
4.0	.1575	75	43	C18930
4.1	.1614	75	43	C18931
4.2	.1654	75	43	C18932
4.5	.1772	80	47	C18935
4.6	.1811	80	47	C18936
4.8	.1890	86	52	C18938
4.9	.1929	86	52	C18939
5.0	.1969	86	52	C18940
5.1	.2008	86	52	C18941
5.2	.2047	86	52	C18942
5.5	.2165	93	57	C18945
6.0	.2362	93	57	C18950
6.5	.2559	101	63	C18955
6.8	.2677	109	69	C18958
7.0	.2756	109	69	C18960
7.5	.2953	109	69	C18965
8.0	.3150	117	75	C18970
8.5	.3346	117	75	C18975
9.0	.3543	125	81	C18980
9.5	.3740	125	81	C18985
10.0	.3937	133	87	C18990
10.2	.4016	133	87	C18991
10.5	.4134	133	87	C18992
11.0	.4331	142	94	C18993
11.5	.4528	142	94	C18995
12.0	.4724	151	101	C18996
12.5	.4921	151	101	C18998
13.0	.5118	151	101	C18999

\*Not split point.



Customer Service: 800.348.2885

# General Application Drills Mechanics Length

## Heavy Duty Mechanics Length

### FEATURES

- 135° split point for faster, easier drill penetration
- HSS construction
- Three flats on sizes above 11/64" for tighter chucking
- Right-hand and left-hand spiral with heavy duty geometry; right-hand spiral drills only in sets
- Selected sizes with right-hand spiral available with 3/8" reduced shanks (see page 23)
- Black and gold finish for increased lubricity and longer drill life
- Offers superior rigidity in portable drilling
- Nitride surface treatment offers tough, protective layer for increased hardness and longer tool life



Style 1875R Right-Hand Spiral Black and Gold



Style 1875L Left-Hand Spiral Black and Gold



Style 1876 3/8" Reduced Shank Black and Gold

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1875R Black & Gold	Style 1875L Black & Gold
1/16*	.0625	1.59	1-7/8	7/8	C23830	C23701
5/64*	.0781	1.98	2	1	C23831	—
3/32*	.0938	2.38	2-1/4	1-1/4	C23832	—
7/64*	.1094	2.78	2-3/8	1-5/16	C23833	—
1/8*	.1250	3.18	2-1/2	1-7/16	C23834	C23702
9/64*	.1406	3.57	2-5/8	1-9/16	C23835	—
5/32*	.1562	3.97	2-3/4	1-11/16	C23836	—
11/64*	.1719	4.37	2-7/8	1-13/16	C23837	—
3/16	.1875	4.76	3	1-7/8	C23838	C23703
13/64	.2031	5.16	3-1/8	1-15/16	C23839	—
7/32	.2188	5.56	3-1/4	2	C23840	—
15/64	.2344	5.95	3-3/8	2-1/16	C23841	—
1/4	.2500	6.35	3-1/2	2	C23842	C23704
17/64	.2656	6.75	3-5/8	2-1/8	C23843	—
9/32	.2812	7.14	3-3/4	2-1/4	C23844	—
19/64	.2969	7.54	3-7/8	2-3/8	C23845	—
5/16	.3125	7.94	4	2-1/2	C23846	C23706
21/64	.3281	8.33	4-1/16	2-9/16	C23847	—
11/32	.3438	8.73	4-1/8	2-5/8	C23848	—
23/64	.3594	9.13	4-3/16	2-11/16	C23849	—
3/8	.3750	9.53	4-1/4	2-11/16	C23850	C23707
25/64**	.3906	9.92	4-5/16	2-3/4	C23851	—
13/32**	.4062	10.32	4-3/8	2-13/16	C23852	—
27/64	.4219	10.72	4-7/16	2-7/8	C23853	—
7/16	.4375	11.11	4-1/2	2-15/16	C23854	C23708
29/64	.4531	11.51	4-5/8	3	C23855	—
15/32	.4688	11.91	4-3/4	3-1/8	C23856	—
31/64	.4844	12.30	4-7/8	3-1/4	C23857	—
1/2	.5000	12.70	5	3-3/8	C23859	C23709

\*No flats on shank.

\*\*Style 1875 sizes 25/64" and 13/32" drills with flats will fit in 3/8" shank drill chucks without having reduced shanks.



Customer Service: 800.348.2885

# General Application Drills Mechanics Length

## Heavy Duty Mechanics Length (continued)

### INCH SIZES with 3/8" REDUCED SHANKS

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1876 Black & Gold
27/64	.4219	10.72	4-7/16	2-7/8	C23860
7/16	.4375	11.11	4-1/2	2-15/16	C23861
29/64	.4531	11.51	4-5/8	3	C23862
15/32	.4688	11.91	4-3/4	3-1/8	C23863
31/64	.4844	12.30	4-7/8	3-1/4	C23864
1/2	.5000	12.70	5	3-3/8	C23865

### SETS

Drill Sizes	No. of Pieces	Style 1875 Black & Gold	Bit Barrel™ Style 1875 Black & Gold	3/8" Shank Style 1876 Black & Gold
1/16" – 1/4" x 1/64"	13	C18126	—	—
1/16" – 1/2" x 1/32"	15	C21160	—	—
1/16" – 3/8" x 1/64"	21	C21161	—	—
1/16" – 1/2" x 1/64"	29	C21162	C21165	C21163*

\*Includes Style 1875 in sizes 25/64" and 13/32" which will fit in 3/8" shank drill chucks without having reduced shanks.



Bit Barrel Set C21165

## Cobalt Left-Hand Mechanics Length

### FEATURES

- 135° split point for faster, easier drill penetration
- Straw finish
- Industrial-grade cobalt HSS substrate for use in hard metal, stainless steel, titanium, and inconel
- Superior rigidity in portable drilling



Style 1880 Straw Finish

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1880 Straw Finish
5/64	.0781	1.98	2	1	C30505
7/64	.1094	2.78	2-3/16	1	C30507
1/8	.1250	3.18	2-1/4	1-1/16	C30508
5/32	.1562	3.97	2-9/16	1-1/4	C30510
3/16	.1875	4.76	2-7/8	1-1/2	C30512
7/32	.2188	5.56	3-1/8	1-5/8	C30514
1/4	.2500	6.35	3-5/16	1-3/4	C30516
9/32	.2812	7.14	3-9/16	2	C30518
19/64	.2969	7.54	3-5/8	2-1/16	C30519
5/16	.3125	7.94	3-3/4	2-1/8	C30520
11/32	.3438	8.73	3-15/16	2-1/4	C30522
3/8	.3750	9.53	4-1/8	2-3/8	C30524
13/32	.4063	10.32	4-3/8	2-1/2	C30526
7/16	.4375	11.11	4-9/16	2-5/8	C30528
15/32	.4688	11.91	4-3/4	2-3/4	C30530
1/2	.5000	12.70	5	2-7/8	C30532



Customer Service: 800.348.2885



# General Application Drills

## Screw Machine Length

### Heavy Duty Screw Machine Length

#### FEATURES

- 135° split point for faster, easier drill penetration
- HSS substrate and heavy duty geometry
- Short flutes for rigid, strong tools
- Black oxide finish for increased wear resistance and improved lubricity; reduces chip welding and galling
- Superior rigidity in hand or machine drilling



Style 1896 Black Oxide

#### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1896 Black Oxide
60*	.0400	1.02	1-3/8	1/2	C23500
59*	.0410	1.04	1-3/8	1/2	C23501
58*	.0420	1.07	1-3/8	1/2	C23502
57*	.0430	1.09	1-3/8	1/2	C23503
56*	.0465	1.18	1-3/8	1/2	C23504
55*	.0520	1.32	1-5/8	5/8	C23505
54*	.0550	1.40	1-5/8	5/8	C23506
53*	.0595	1.51	1-5/8	5/8	C23507
1/16	.0625	1.59	1-5/8	5/8	C23460
52	.0635	1.61	1-11/16	11/16	C23508
51	.0670	1.70	1-11/16	11/16	C23509
50	.0700	1.78	1-11/16	11/16	C23510
49	.0730	1.85	1-11/16	11/16	C23511
48	.0760	1.93	1-11/16	11/16	C23512
5/64	.0781	1.98	1-11/16	11/16	C23461
47	.0785	1.99	1-3/4	3/4	C23513
46	.0810	2.06	1-3/4	3/4	C23514
45	.0820	2.08	1-3/4	3/4	C23515
44	.0860	2.18	1-3/4	3/4	C23516
43	.0890	2.26	1-3/4	3/4	C23517
42	.0935	2.37	1-3/4	3/4	C23518
3/32	.0938	2.38	1-3/4	3/4	C23462
41	.0960	2.44	1-13/16	13/16	C23519
40	.0980	2.49	1-13/16	13/16	C23520
39	.0995	2.53	1-13/16	13/16	C23521
38	.1015	2.58	1-13/16	13/16	C23522
37	.1040	2.64	1-13/16	13/16	C23523
36	.1065	2.71	1-13/16	13/16	C23524
7/64	.1094	2.78	1-13/16	13/16	C23463
35	.1100	2.79	1-7/8	7/8	C23525
34	.1110	2.82	1-7/8	7/8	C23526
33	.1130	2.87	1-7/8	7/8	C23527
32	.1160	2.95	1-7/8	7/8	C23528
31	.1200	3.05	1-7/8	7/8	C23529
1/8	.1250	3.18	1-7/8	7/8	C23464
30	.1285	3.26	1-15/16	15/16	C23530
29	.1360	3.45	1-15/16	15/16	C23531
28	.1405	3.57	1-15/16	15/16	C23532

\*Not split point.

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Customer Service: 800.348.2885

# General Application Drills

## Screw Machine Length

### Heavy Duty Screw Machine Length (continued)

#### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1896 Black Oxide
9/64	.1406	3.57	1-15/16	15/16	C23465
27	.1440	3.66	2-1/16	1	C23533
26	.1470	3.73	2-1/16	1	C23534
25	.1495	3.80	2-1/16	1	C23535
24	.1520	3.86	2-1/16	1	C23536
23	.1540	3.91	2-1/16	1	C23537
5/32	.1562	3.97	2-1/16	1	C23466
22	.1570	3.99	2-1/8	1-1/16	C23538
21	.1590	4.04	2-1/8	1-1/16	C23539
20	.1610	4.09	2-1/8	1-1/16	C23540
19	.1660	4.22	2-1/8	1-1/16	C23541
18	.1695	4.31	2-1/8	1-1/16	C23542
11/64	.1719	4.37	2-1/8	1-1/16	C23467
17	.1730	4.39	2-3/16	1-1/8	C23543
16	.1770	4.50	2-3/16	1-1/8	C23544
15	.1800	4.57	2-3/16	1-1/8	C23545
14	.1820	4.62	2-3/16	1-1/8	C23546
13	.1850	4.70	2-3/16	1-1/8	C23547
3/16	.1875	4.76	2-3/16	1-1/8	C23468
12	.1890	4.80	2-1/4	1-3/16	C23548
11	.1910	4.85	2-1/4	1-3/16	C23549
10	.1935	4.91	2-1/4	1-3/16	C23550
9	.1960	4.98	2-1/4	1-3/16	C23551
8	.1990	5.05	2-1/4	1-3/16	C23552
7	.2010	5.11	2-1/4	1-3/16	C23553
13/64	.2031	5.16	2-1/4	1-3/16	C23469
6	.2040	5.18	2-3/8	1-1/4	C23554
5	.2055	5.22	2-3/8	1-1/4	C23555
4	.2090	5.31	2-3/8	1-1/4	C23556
3	.2130	5.41	2-3/8	1-1/4	C23557
7/32	.2188	5.56	2-3/8	1-1/4	C23470
2	.2210	5.61	2-7/16	1-5/16	C23558
1	.2280	5.79	2-7/16	1-5/16	C23559
15/64	.2344	5.95	2-7/16	1-5/16	C23471
1/4	.2500	6.35	2-1/2	1-3/8	C23472
17/64	.2656	6.75	2-5/8	1-7/16	C23473
9/32	.2812	7.14	2-11/16	1-1/2	C23474
19/64	.2969	7.54	2-3/4	1-9/16	C23475
5/16	.3125	7.94	2-13/16	1-5/8	C23476
21/64	.3281	8.33	2-15/16	1-11/16	C23477
11/32	.3438	8.73	3	1-11/16	C23478
23/64	.3594	9.13	3-1/16	1-3/4	C23479
3/8	.3750	9.53	3-1/8	1-13/16	C23480
25/64	.3906	9.92	3-1/4	1-7/8	C23481
13/32	.4062	10.32	3-5/16	1-15/16	C23482
27/64	.4219	10.72	3-3/8	2	C23483
7/16	.4375	11.11	3-7/16	2-1/16	C23484
29/64	.4531	11.51	3-9/16	2-1/8	C23485
15/32	.4688	11.91	3-5/8	2-1/8	C23486
31/64	.4844	12.30	3-11/16	2-3/16	C23487
1/2	.5000	12.70	3-3/4	2-1/4	C23488

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Customer Service: 800.348.2885

General Application Drills  
Screw Machine Length

Heavy Duty Screw Machine Length (continued)

METRIC SIZES

Drill Dia.	Decimal Equiv.	Overall Length	Flute Length	Style 1896 Black Oxide
1.0*	.0394	26	6	C23885
1.25*	.0492	30	8	C23886
1.5*	.0591	32	9	C23887
1.8	.0709	36	11	C24018
2.0	.0787	38	12	C23888
2.2	.0866	40	13	C23889
2.3	.0906	40	13	C23890
2.4	.0945	43	14	C23891
2.5	.0984	43	14	C23892
2.6	.1024	43	14	C23893
2.8	.1102	46	16	C23894
3.0	.1181	46	16	C23895
3.1	.1220	49	18	C23896
3.2	.1260	49	18	C23898
3.3	.1299	49	18	C23899
3.4	.1339	52	20	C23900
3.5	.1378	52	20	C23901
3.6	.1417	52	20	C24036
3.7	.1457	52	20	C23902
3.8	.1496	55	22	C23903
4.0	.1575	55	22	C23904
4.1	.1614	55	22	C23905
4.2	.1654	55	22	C23906
4.3	.1693	58	24	C23907
4.5	.1772	58	24	C23908
4.6	.1811	58	24	C23909
4.7	.1850	58	24	C23910
4.8	.1890	62	26	C23911
4.9	.1929	62	26	C23912
5.0	.1969	62	26	C23913
5.1	.2008	62	26	C23914
5.2	.2047	62	26	C23915
5.3	.2087	62	26	C23916
5.5	.2165	66	28	C23917
5.6	.2205	66	28	C23918
5.7	.2244	66	28	C23919
5.8	.2283	66	28	C24058
6.0	.2362	66	28	C23920
6.1	.2402	70	31	C23921
6.3	.2480	70	31	C23922
6.5	.2559	70	31	C23923
6.6	.2598	70	31	C23924
6.8	.2677	74	34	C23925
6.9	.2717	74	34	C23926
7.0	.2756	74	34	C23927
7.2	.2835	74	34	C23928
7.3	.2874	74	34	C23929
7.5	.2953	74	34	C23930
8.0	.3150	79	37	C23931
8.5	.3346	79	37	C23932

\*Not split point.

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Customer Service: 800.348.2885

General Application Drills  
Screw Machine Length

Heavy Duty Screw Machine Length (continued)

METRIC SIZES

Drill Dia.	Decimal Equiv.	Overall Length	Flute Length	Style 1896 Black Oxide
9.0	.3543	84	40	C23933
9.5	.3740	84	40	C23934
10.0	.3937	89	43	C23935
10.2	.4016	89	43	C23936
10.5	.4134	89	43	C23937
11.0	.4331	95	47	C23938
11.5	.4528	95	47	C23939
12.0	.4724	102	51	C23940
12.2	.4803	102	51	C23941
12.5	.4921	102	51	C23942
13.0	.5118	102	51	C23943
13.5	.5315	107	54	C23964
14.0	.5512	107	54	C23965
14.5	.5709	111	56	C23966
15.0	.5906	111	56	C23967
16.0	.6299	115	58	C23969
17.0	.6693	119	60	C23971

SETS in METAL CASE

Drill Sizes	No. of Pieces	Style 1896 Black Oxide
1/16" – 1/2" x 1/64"	29	C21133
#1 – #60	60	C21947

Recommended Drill Speeds and Coolants – Nonferrous Materials  
(see page 17 for Recommendations for Ferrous Materials)

	Brinell	Surface Feet per Minute	Coolant
Aluminum			
Pure	140-350	130-200	Soluble Oil
Aluminum Alloys	140-330	150-300	Soluble Oil
Leaded	40-100	200-325	Soluble Oil
Silicon Alloy Die Cast	40-100	25-50	Soluble Oil
Brass	190-210	200-250	Cutting or Soluble Oil
Bronze	150-200	200-250	Soluble Oil
Copper, Nickel & Copper Tin Alloy	65-100	140-200	Cutting or Soluble Oil
Copper Aluminum Alloys	30-100	120-200	Cutting or Soluble Oil
Magnesium Alloys			
Wrought	50-90	140-330	Cutting or Soluble Oil
Cast	50-90	140-365	Cutting or Soluble Oil
Nickel Alloys-Wrought and Cast	80-170	70	Cutting or Soluble Oil
Monel	115-240	55	Cutting or Soluble Oil
Beryllium Nickel	200-250	12	Soluble Oil
Zinc Alloy	112-126	200-250	Soluble Oil



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# General Application Drills Extended Length

## Aircraft Extension

### FEATURES

- General purpose jobber length flute construction with longer shank lengths for extended reach
- Available in 6" and 12" overall lengths
- 135° split point for faster drill penetration
- HSS substrate
- Black oxide finish for increased wear resistance and improved lubricity



### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Flute Length	Style 1803 6" Overall Black Oxide	Style 1805 12" Overall Black Oxide
1/16	.0625	1.59	7/8	C23621	C23721
5/64	.0781	1.98	1	C23622	C23722
3/32	.0938	2.38	1-1/4	C23623	C23723
40	.0980	2.49	1-3/8	C23700	C23800
39	.0995	2.53	1-3/8	C23699	C23799
38	.1015	2.58	1-7/16	C23698	—
37	.1040	2.64	1-7/16	C23697	—
36	.1065	2.71	1-7/16	C23696	—
7/64	.1094	2.78	1-1/2	C23624	C23724
35	.1100	2.79	1-1/2	C23695	—
34	.1110	2.82	1-1/2	C23694	—
33	.1130	2.87	1-1/2	C23693	—
32	.1160	2.95	1-5/8	C23692	—
31	.1200	3.05	1-5/8	C23691	C23791
1/8	.1250	3.18	1-5/8	C23625	C23725
30	.1285	3.26	1-5/8	C23690	C23790
29	.1360	3.45	1-3/4	C23689	C23789
28	.1405	3.57	1-3/4	C23688	—
9/64	.1406	3.57	1-3/4	C23626	C23726
27	.1440	3.66	1-7/8	C23687	—
26	.1470	3.73	1-7/8	C23686	—
25	.1495	3.80	1-7/8	C23685	C23785
24	.1520	3.86	2	C23684	—
23	.1540	3.91	2	C23683	—
5/32	.1562	3.97	2	C23627	C23727
22	.1570	3.99	2	C23682	—
21	.1590	4.04	2-1/8	C23681	C23781
20	.1610	4.09	2-1/8	C23680	C23780
19	.1660	4.22	2-1/8	C23679	C23779
18	.1695	4.31	2-1/8	C23678	—
11/64	.1719	4.37	2-1/8	C23628	C23728
17	.1730	4.39	2-3/16	C23677	—
16	.1770	4.50	2-3/16	C23676	C23776
15	.1800	4.57	2-3/16	C23675	—
14	.1820	4.62	2-3-16	C23674	—
13	.1850	4.70	2-5/16	C23673	C23773
3/16	.1875	4.76	2-5/16	C23629	C23729
12	.1890	4.80	2-5/16	C23672	C23772
11	.1910	4.85	2-5/6	C23671	C23771
10	.1935	4.91	2-7/16	C23670	C23770

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# General Application Drills Extended Length

## Aircraft Extension (continued)

Drill Dia.	Decimal Equiv.	Metric Equiv.	Flute Length	Style 1803 6" Overall Black Oxide	Style 1805 12" Overall Black Oxide
9	.1960	4.98	2-7/16	C23669	C23769
8	.1990	5.05	2-7/16	C23668	C23768
7	.2010	5.11	2-7/16	C23667	C23767
13/64	.2031	5.16	2-7/16	C23630	C23730
6	.2040	5.18	2-1/2	C23666	C23766
5	.2055	5.22	2-1/2	C23665	C23765
4	.2090	5.31	2-1/2	C23664	C23764
3	.2130	5.41	2-1/2	C23663	C23763
7/32	.2188	5.56	2-1/2	C23631	C23731
2	.2210	5.61	2-5/8	C23662	C23762
1	.2280	5.79	2-5/8	C23661	C23761
15/64	.2344	5.95	2-5/8	C23632	C23732
1/4, E	.2500	6.35	2-3/4	C23633	C23733
17/64	.2656	6.75	2-5/8	C23634	C23734
9/32	.2812	7.14	3-1/16	C23635	C23735
19/64	.2969	7.54	3-1/16	C23636	C23736
5/16	.3125	7.94	3-3/16	C23637	C23737
21/64	.3281	8.33	3-7/16	C23638	C23738
11/32	.3438	8.73	3-7/16	C23639	C23739
23/64	.3594	9.13	3-1/2	C23640	C23740
3/8	.3750	9.53	3-5/8	C23641	C23741
25/64	.3906	9.92	3-3/4	C23642	C23742
13/32	.4062	10.32	3-3/4	C23643	C23743
27/64	.4219	10.72	3-15/16	C23644	C23744
7/16	.4375	11.11	4-1/16	C23645	C23745
29/64	.4531	11.51	4-3/16	—	C23746
1/2	.5000	12.70	4-1/2	C23649	C23749

### Drill Feeds

Diameter Range (in)	Normal Feeds (IPR)	Heavy Feeds (IPR)
1/16 thru 1/8	.001-.002	.002-.004
over 1/8 thru 1/4	.002-.004	.004-.008
over 1/4 thru 1/2	.004-.008	.008-.016
over 1/2 thru 1	.008-.016	.016-.024
over 1	.016-.024	.024-.032



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# General Application Drills Extended Length

## Extra Length

### FEATURES

- Heavy duty construction for extra tool strength
- Extra lengths for hard-to-reach applications
- 118° notched point for self-centering drill penetration

- HSS substrate
- Black oxide finish for increased wear resistance and improved lubricity



Style 1806 12" OAL Black Oxide

Style 1807 18" OAL Black Oxide

Drill Dia.	Decimal Equiv.	Metric Equiv.	Style 1806	Style 1807
			9" Flute Length 12" Overall Length Black Oxide	14" Flute Length 18" Overall Length Black Oxide
1/8	.1250	3.18	C20436	—
5/32	.1562	3.97	C20438	—
3/16	.1875	4.76	C20440	—
7/32	.2188	5.56	C20442	—
1/4	.2500	6.35	C20444	C20481
9/32	.2812	7.14	C20446	C20483
5/16	.3125	7.94	C20448	C20485
11/32	.3438	8.73	C20450	C20487
3/8	.3750	9.53	C20452	C20489
13/32	.4062	10.32	C20454	C20491
7/16	.4375	11.11	C20456	C20493
15/32	.4688	11.91	C20458	C20495
1/2	.5000	12.70	C20460	C20497
17/32	.5313	13.50	C20462	—
9/16	.5625	14.29	C20464	—
19/32	.5938	15.08	C20466	—
5/8	.6250	15.88	C20468	—
21/32	.6563	16.67	C20470	—
11/16	.6875	17.46	C20472	—

# General Application Drills Taper Shank

## General Purpose Taper Shank

### FEATURES

- General purpose geometry with standard Morse taper shank dimensions
- HSS substrate engineered for toughness and ideal for portable drilling and maintenance applications
- 118° point for general purpose use

- Black oxide finish for increased wear resistance and improved lubricity, reduced chip welding, and galling
- Oversize and undersize shanks available in selected sizes



Style 1894 Black Oxide

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Morse Taper Number	Style 1894 Black Oxide
1/8	.1250	3.18	5-1/8	1-7/8	1	C20049
9/64	.1406	3.57	5-1/8	1-7/8	1	C20050
5/32	.1562	3.97	5-3/8	2-1/8	1	C20051
11/64	.1719	4.37	5-3/4	2-1/2	1	C20052
3/16	.1875	4.76	5-3/4	2-1/2	1	C20053
13/64	.2031	5.16	6	2-3/4	1	C20054
7/32	.2188	5.56	6	2-3/4	1	C20055
15/64	.2344	5.95	6-1/8	2-7/8	1	C20056
1/4	.2500	6.35	6-1/8	2-7/8	1	C20057
17/64	.2656	6.75	6-1/4	3	1	C20058
9/32	.2812	7.14	6-1/4	3	1	C20059
19/64	.2969	7.54	6-3/8	3-1/8	1	C20060
5/16	.3125	7.94	6-3/8	3-1/8	1	C20061
21/64	.3281	8.33	6-1/2	3-1/4	1	C20062
11/32	.3438	8.73	6-1/2	3-1/4	1	C20063
23/64	.3594	9.13	6-3/4	3-1/2	1	C20064
3/8	.3750	9.53	6-3/4	3-1/2	1	C20524
3/8	.3750	9.53	7-3/8	3-1/2	2	C20020
25/64	.3906	9.92	7	3-5/8	1	C20525
13/32	.4062	10.32	7	3-5/8	1	C20526
13/32	.4063	10.32	7-1/2	3-5/8	2	C20022
27/64	.4219	10.72	7-1/4	3-7/8	1	C20527
7/16	.4375	11.11	7-1/4	3-7/8	1	C20528
7/16	.4375	11.11	7-3/4	3-7/8	2	C20024
29/64	.4531	11.51	7-1/2	4-1/8	1	C20529
15/32	.4688	11.91	7-1/2	4-1/8	1	C20530
1/2	.5000	12.70	7-3/4	4-3/8	1	C20026
35/64	.5469	13.89	8-3/4	4-7/8	2	C20535
5/8	.6250	15.88	8-3/4	4-7/8	2	C20540
43/64	.6719	17.07	9-1/4	5-3/8	2	C20543
11/16	.6875	17.46	10	5-3/8	3	C20029
45/64	.7031	17.86	9-1/2	5-5/8	2	C20545
3/4	.7500	19.05	10-1/2	5-7/8	3	C20030
49/64	.7656	19.45	9-7/8	6	2	C20549
25/32	.7812	19.84	9-7/8	6	2	C20550
51/64	.7969	20.24	10-3/4	6-1/8	3	C20551
13/16	.8125	20.64	10-3/4	6-1/8	3	C20552
53/64	.8281	21.03	10-3/4	6-1/8	3	C20553
27/32	.8438	21.43	10-3/4	6-1/8	3	C20554
55/64	.8594	21.83	10-3/4	6-1/8	3	C20555
7/8	.8750	22.23	10	6-1/8	2	C20035
7/8	.8750	22.23	10-3/4	6-1/8	3	C20556

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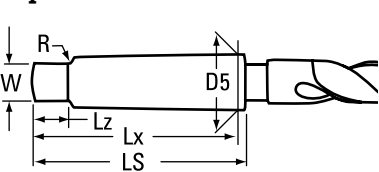
**Taper Shank**

**General Purpose Taper Shank (continued)**

**INCH SIZES**

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Morse Taper Number	Style 1894 Black Oxide
57/64	.8906	22.62	10-3/4	6-1/8	3	C20557
29/32	.9062	23.02	10-3/4	6-1/8	3	C20558
59/64	.9219	23.42	10-3/4	6-1/8	3	C20559
15/16	.9375	23.81	10-3/4	6-1/8	3	C20560
61/64	.9531	24.21	11	6-3/8	3	C20561
31/32	.9688	24.61	11	6-3/8	3	C20562
63/64	.9844	25.00	11	6-3/8	3	C20563
1	1.0000	25.40	11	6-3/8	3	C20564
1-1/64	1.0156	25.80	11-1/8	6-1/2	3	C20565
1-1/32	1.0312	26.19	11-1/8	6-1/2	3	C20566
1-3/64	1.0469	26.59	11-1/4	6-5/8	3	C20567
1-1/16	1.0625	26.99	11-1/4	6-5/8	3	C20568
1-5/64	1.0781	27.38	12-1/2	6-7/8	4	C20569
1-3/32	1.0938	27.78	12-1/2	6-7/8	4	C20570
1-7/64	1.1094	28.18	12-3/4	7-1/8	4	C20571
1-1/8	1.1250	28.58	11-3/4	7-1/8	3	C20040
1-1/8	1.1250	28.58	12-3/4	7-1/8	4	C20572
1-9/64	1.1406	28.97	12-7/8	7-1/4	4	C20573
1-5/32	1.1562	29.37	12-7/8	7-1/4	4	C20574
1-11/64	1.1719	29.77	13	7-3/8	4	C20575
1-3/16	1.1875	30.16	13	7-3/8	4	C20576
1-13/64	1.2031	30.56	13-1/8	7-1/2	4	C20577
1-7/32	1.2188	30.96	13-1/8	7-1/2	4	C20578
1-15/64	1.2344	31.35	13-1/2	7-7/8	4	C20579
1-1/4	1.2500	31.75	12-1/2	7-7/8	3	C20043
1-1/4	1.2500	31.75	13-1/2	7-7/8	4	C20580
1-17/64	1.2656	32.15	14-1/8	8-1/2	4	C20581
1-9/32	1.2812	32.54	14-1/8	8-1/2	4	C20582
1-19/64	1.2969	32.94	14-1/4	8-5/8	4	C20583
1-5/16	1.3125	33.34	14-1/4	8-5/8	4	C20584
1-21/64	1.3281	33.73	14-3/8	8-3/4	4	C20585
1-11/32	1.3438	34.13	14-3/8	8-3/4	4	C20586
1-23/64	1.3594	34.53	14-1/2	8-7/8	4	C20587
1-3/8	1.3750	34.93	14-1/2	8-7/8	4	C20588
1-25/64	1.3906	35.32	14-5/8	9	4	C20589
1-13/32	1.4062	35.72	14-5/8	9	4	C20590
1-27/64	1.4219	36.12	14-3/4	9-1/8	4	C20591
1-7/16	1.4375	36.51	14-3/4	9-1/8	4	C20592
1-1/2	1.5000	38.10	15	9-3/8	4	C20596
1-9/16	1.5625	39.69	16-5/8	9-5/8	5	C20068
1-5/8	1.6250	41.28	15-5/8	10	4	C20045
1-5/8	1.6250	41.28	17	10	5	C20072

**Morse Taper Shank Specifications**



Morse Taper Shank No.	Taper per Foot	Taper per Inch	D5 Max Shank Diameter	LS Length of Shank	Lx Shank Length to Gage Line	Lz Length of Tang	W Thickness of Tang	R Radius
1	.5985	.0498	.475	2.56	2.44	.37	.20	.19
2	.5994	.0499	.700	3.12	2.94	.44	.25	.25
3	.6023	.0501	.938	3.87	3.69	.56	.31	.28
4	.6232	.0519	1.231	4.87	4.62	.62	.47	.31
5	.6315	.0526	1.749	6.12	5.87	.75	.62	.37
6	.6256	.0521	2.494	8.56	8.25	1.12	.75	.50

**Reduced Shank**

**Silver & Deming**

**FEATURES**

- Style 1813
  - 118° point
  - round 1/2" reduced shank
  - Black oxide finish
  - HSS substrate
- Style 1892
  - 118° point
  - 3 flats on 1/2" reduced shank
  - Black oxide finish
  - HSS substrate
- Style 1877
  - 118° split point
  - 3 flats on 1/2" reduced shank
  - Black and gold finish
  - HSS substrate
- Style 1877M
  - 118° split point
  - 3 flats on 1/2" reduced shank
  - Black oxide finish
  - HSS substrate
  - Metric sizes only



Style 1813 black oxide with round shank



Style 1892 black oxide with flattened shank



Style 1877 black & gold split point with flattened shank



Style 1877M black oxide split point with flattened shank (metric sizes only)

**INCH SIZES**

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1813 Black Oxide	Style 1892 Black Oxide	Style 1877 Black & Gold
1/2	.5000	12.70	6	3-1/8	C20732	C20670	—
33/64	.5156	13.10	6	3-1/8	C20733	C20671	C17031
17/32	.5312	13.49	6	3-1/8	C20734	C20672	C17032
35/64	.5469	13.89	6	3-1/8	C20735	C20673	C17033
9/16	.5625	14.29	6	3-1/8	C20736	C20674	C17034
37/64	.5781	14.68	6	3-1/8	C20737	C20675	C17035
19/32	.5938	15.08	6	3-1/8	C20738	C20676	C17036
39/64	.6094	15.48	6	3-1/8	C20739	C20677	C17037
5/8	.6250	15.88	6	3-1/8	C20740	C20678	C17038
41/64	.6406	16.27	6	3-1/8	C20741	C20679	C17039
21/32	.6562	16.67	6	3-1/8	C20742	C20680	C17040
43/64	.6719	17.07	6	3-1/8	C20743	C20681	C17041
11/16	.6875	17.46	6	3-1/8	C20744	C20682	C17042
45/64	.7031	17.86	6	3-1/8	C20745	C20683	C17043
23/32	.7188	18.26	6	3-1/8	C20746	C20684	C17044
47/64	.7344	18.65	6	3-1/8	C20747	C20685	C17045
3/4	.7500	19.05	6	3-1/8	C20748	C20686	C17046
49/64	.7656	19.45	6	3-1/8	C20749	C20687	C17047
25/32	.7812	19.84	6	3-1/8	C20750	C20688	C17048
51/64	.7969	20.24	6	3-1/8	C20669	—	C17049
13/16	.8125	20.64	6	3-1/8	C20751	C20689	C17050
53/64	.8281	21.03	6	3-1/8	C20724	—	C17051
27/32	.8438	21.43	6	3-1/8	C20752	C20690	C17052
55/64	.8594	21.83	6	3-1/8	C20725	—	C17053
7/8	.8750	22.23	6	3-1/8	C20753	C20691	C17054
57/64	.8906	22.62	6	3-1/8	C20726	—	C17055
29/32	.9062	23.02	6	3-1/8	C20754	C20692	C17056
59/64	.9219	23.42	6	3-1/8	C20727	—	C17057
15/16	.9375	23.81	6	3-1/8	C20755	C20693	C17058
61/64	.9531	24.21	6	3-1/8	C20728	—	C17059
31/32	.9688	24.61	6	3-1/8	C20756	C20694	C17060
63/64	.9844	25.00	6	3-1/8	C20729	—	C17061
1	1.0000	25.40	6	3-1/8	C20757	C20695	C17062
1-1/32	1.0312	26.19	6	3-1/8	C20730	—	—

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# Reduced Shank

## Silver & Deming (continued)

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1813 Black Oxide	Style 1892 Black Oxide	Style 1877 Black & Gold
1-1/16	1.0625	26.99	6	3-1/8	C20758	C20696	C17066
1-1/8	1.1250	28.58	6	3-1/8	C20759	C20697	C17070
1-5/32	1.1562	29.37	6	3-1/8	C20731	—	—
1-3/16	1.1875	30.16	6	3-1/8	C20760	C20698	C17074
1-1/4	1.2500	31.75	6	3-1/8	C20761	C20699	C17078
1-5/16	1.3125	33.34	6	3-1/8	C20762	—	C17082
1-3/8	1.3750	34.93	6	3-1/8	C20763	—	C17086
1-7/16	1.4375	36.51	6	3-1/8	C20764	—	C17090
1-1/2	1.5000	38.10	6	3-1/8	C20765	—	C17094

### METRIC SIZES\*

Drill Dia.	Decimal Equiv.	Overall Length	Flute Length	Style 1813 Black Oxide	Style 1877M Black Oxide
13.0	.5118	152	79	C21070	C21170
13.5	.5315	152	79	C21071	C21171
14.0	.5512	152	79	C21072	C21172
14.5	.5709	152	79	C21073	C21173
15.0	.5906	152	79	C21074	C21174
15.5	.6102	152	79	C21075	C21175
16.0	.6299	152	79	C21076	C21176
16.5	.6496	152	79	C21077	C21177
17.0	.6693	152	79	C21078	C21178
17.5	.6890	152	79	C21079	C21179
18.0	.7087	152	79	C21080	C21180
18.5	.7283	152	79	C21081	C21181
19.0	.7480	152	79	C21082	C21182
19.5	.7677	152	79	C21083	C21183
20.0	.7874	152	79	C21084	C21184
21.0	.8268	152	79	C21085	C21185
22.0	.8661	152	79	C21086	C21186
23.0	.9055	152	79	C21087	C21187
24.0	.9449	152	79	C21088	C21188
25.0	.9843	152	79	C21089	C21189

\*Metric sizes made to order (minimum order quantities apply).

### SETS in METAL CASE

	No. of Pieces	Style 1813 EDP No.	Style 1892 EDP No.	Style 1877 EDP No.
In metal case				
9/16" – 1" x 1/16"	8	C21135	C22761	C21164
1/2" – 1" x 1/64"	33	C21134	—	—

# Masonry

## Carbide-Tipped Masonry

### FEATURES

- Oversize carbide tip provides clearance for toggle bolts, anchor screws and expansion drills
- Regular helix for easy dust removal and more steel support for the tip.
- Shank reduced to fit 1/2" drill
- Conforms to ANSI Specification B212.15-1994
- Recommended for use in sandstone and green concrete



Style 1818 Black Finish

### INCH SIZES

Drill Dia.	Minimum Actual Dia.	Metric Equiv.	Overall Length	Useable Length	Shank Diameter	Style 1818 Black
1/8	.134	3.40	3	1-7/8	1/8	C20930
3/16	.198	5.03	3	1-7/8	1/4	C20932
1/4	.260	6.60	4	2-5/8	1/4	C20934
1/4	.260	6.60	6	4-5/8	1/4	C20935
5/16	.327	8.31	4	2-3/4	1/4	C20937
5/16	.327	8.31	6	4-3/4	1/4	C20938
3/8	.390	9.91	4	2-3/4	1/4	C20939
3/8	.390	9.91	6	4-3/4	1/4	C20940
7/16	.458	11.63	6	4-3/4	1/4	C20941
7/16	.458	11.63	6	4-3/8	3/8	C20942
1/2	.520	13.21	4	4-3/8	3/8	C20943
1/2	.520	13.21	6	4-3/8	1/4	C20944
9/16	.587	14.91	6	4-3/8	1/2	C20945
5/8	.650	16.51	6	4-3/8	3/8	C20946
11/16	.713	18.11	6	4-3/8	1/2	C20947
3/4	.775	19.69	6	4-3/8	1/2	C20948
7/8	.905	22.99	6	4-3/8	1/2	C20949
1	1.030	26.16	6	4-3/8	1/2	C20950

### SET in PLASTIC CASE

Drill Sizes	No. of Pieces	Overall Length	Style 1818 Black
in plastic case			
1/4", 5/16", 3/8", 1/2"	4	4	C17003



# Other Drills Masonry

## Fast Helix Carbide-Tipped Masonry

### FEATURES

- Oversize carbide tip provides clearance for toggle bolts, anchor screws and expansion drills
- Fast helix for higher volume material removal
- For use in hard concrete
- Available in regular lengths and extended lengths
- Conforms to ANSI specification B212.15-1994
- Recommended for use in aggregate and hard concrete



Style 1889 Regular Length Bright



Style 1888 12" Overall Length Bright



Style 1888 18" Overall Length Bright

### INCH SIZES

Drill Dia.	Minimum Actual Dia.	Metric Equiv.	Shank Dia.	Overall Length	Useable Length	Style 1889 Regular OAL Bright
1/8	.134	3.40	1/8	3	1-1/4	C23286
3/16	.198	5.03	3/16	4	1-3/4	C23270
1/4	.260	6.60	1/4	4	2-1/2	C23287
1/4	.260	6.60	1/4	6	4-1/2	C23271
1/4	.260	6.60	1/4	12	9-1/2	C23272
5/16	.327	8.31	1/4	4	2-1/2	C23288
5/16	.327	8.31	1/4	6	4-1/2	C23273
5/16	.327	8.31	1/4	12	9-1/2	C23274
3/8	.390	9.91	1/4	4	2-1/2	C23289
3/8	.390	9.91	1/4	6	4-1/2	C23275
3/8	.390	9.91	1/4	12	9-1/2	C23276
7/16	.428	10.87	1/4	4	4-3/8	C22539
7/16	.428	10.87	1/4	6	4-3/8	C23277
1/2	.520	13.21	1/4	4	4-3/8	C23278
1/2	.520	13.21	1/4	6	4-3/8	C23279
1/2	.520	13.21	3/8	6	4-3/8	C23280
1/2	.520	13.21	3/8	12	9-1/2	C23281
9/16	.582	14.78	3/8	6	4-3/8	C22540
5/8	.650	16.51	3/8	6	4-3/8	C23282
3/4	.775	19.69	3/8	6	4-3/8	C23283
7/8	.905	22.99	1/2	6	4-3/8	C23284
1	1.030	26.16	1/2	6	4-3/8	C23285

### EXTENDED LENGTH INCH SIZES

Drill Dia.	Minimum Actual Dia.	Metric Equiv.	Shank Dia.	9-3/4" Useable Length 12" OAL	15-3/4" Useable Length 18" OAL	Style 1888
1/4	.260	6.60	1/4	C20970	C20960	
5/16	.328	8.33	1/4	C20971	C20961	
3/8	.390	9.91	1/4	C20972	C20962	
1/2	.525	13.34	3/8	C20973	C20963	
5/8	.650	16.51	1/2	C20974	C20964	
3/4	.775	19.69	1/2	C20975	C20965	
7/8	.905	22.99	1/2	C20976	—	
1	1.030	26.16	1/2	C20977	C20966	

### SETS IN PLASTIC CASE

Drill Sizes	No. of Pieces	Overall Length	Style 1889 Bright
1/4", 5/16", 3/8", 1/2"	4	4	C23290



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DRILLS

HOLE SAWS

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# Other Drills Masonry

## Rotary Percussion Carbide-Tipped Masonry

### FEATURES

- 130° point
- Perfect for high impact drilling
- Can be used in hard marble, fieldstone, granite and concrete
- Specifically designed for use in heavy duty hammer drills
- Conforms to ANSI specification B212.15-194



Style 1819 Black Oxide

### INCH SIZES

Drill Dia.	Minimum Actual Dia.	Metric Equiv.	Overall Length	Flute Length	Shank Diameter	Style 1819 Black Oxide
1/8	.134	3.40	3	1-5/8	1/8	C20700
5/32	.165	4.19	6	3-1/8	5/32	C20701
3/16	.198	5.03	4	2-1/2	3/16	C20702
3/16	.198	5.03	6	2-1/2	3/16	C20703
1/4	.260	6.60	6	3-1/4	1/4	C20704
1/4	.260	6.60	12	9-1/8	1/4	C20705
5/16	.327	8.31	6	3-1/2	1/4	C20706
3/8	.390	9.91	6	3-3/4	1/4	C20707
1/2	.520	13.21	6	4	3/8	C20708
1/2	.520	13.21	12	9-1/2	1/2	C20709
5/8	.650	16.51	6	3-5/8	3/8	C20710
3/4	.775	19.69	6	3-1/2	1/2	C20711

## Tanged Tapcon® Carbide-Tipped Masonry

### FEATURES

- For use with Tapcon® type anchoring systems
- Hardened alloy steel for long life and superior performance
- Close tolerance carbide tip



Style 1841 Black Oxide

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Useable Length	Style 1841 Black Oxide
5/32	.1562	3.97	4-1/2	3-1/2	C19010
5/32	.1562	3.97	5-1/2	4-1/2	C19012
3/16	.1875	4.76	4-1/2	3-1/2	C19011
3/16	.1875	4.76	5-1/2	4-1/2	C19013



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DRILLS

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**SDS-Plus® Carbide-Tipped Masonry**

**FEATURES**

- Specifically designed for use with all SDS high impact rotary hammers
- Special flute design reduces jamming and tip breakage
- Specially designed point allows faster penetration

- Conforms to ANSI specification B212.15-194



Style 1821 Black Oxide

**INCH SIZES**

Drill Dia.	Minimum Actual Dia.	Metric Equiv.	Overall Length	Flute Length	Style 1821 Black Oxide
3/16	.198	5.03	4-5/8	2	C21032
3/16	.198	5.03	6-5/8	4	C20712
3/16	.198	5.03	8-5/8	6	C21033
1/4	.260	6.60	4-5/8	2	C21034
1/4	.260	6.60	6-5/8	4	C20713
1/4	.260	6.60	8-5/8	6	C21035
5/16	.327	8.31	6-5/8	4	C21036
3/8	.390	9.91	6-5/8	4	C20714
3/8	.390	9.91	10-5/8	8	C21039
3/8	.390	9.91	12-5/8	10	C21040
1/2	.520	13.21	6-5/8	4	C20715
1/2	.520	13.21	10-5/8	8	C21042
1/2	.520	13.21	12-5/8	10	C21043
5/8	.650	16.51	9-3/4	6-1/2	C20716
5/8	.650	16.51	12-3/4	10	C21046
3/4	.775	19.69	9-3/4	6-1/2	C20717
3/4	.775	19.69	12-3/4	10	C21048

® Registered trademark of the Robert Bosch Corp.

**Step Drills**

**FEATURES**

- 118° split point for faster, easier drill penetration
- Step standard
- Available in bright and TiN (titanium nitride) coated versions
- Standard off-the-shelf delivery from stock



Style 1874 Bright Finish



Style 1874TN TiN-coated

**INCH SIZES**

Step Description	Hole Sizes	Decimal Equiv.	Shank Diameter	Overall Length	Style 1874 Bright	Style 1874TN TiN Coated
3/16-1/2 x 1/16	3/16-1/2	.1875 - .5000	1/4	3-1/8	C20285	C20295
3/16-7/8 x 1/16	3/16-7/8	.1875 - .8750	3/8	3-1/4	C20288	C20298
1/8-1/2 x 1/32	1/8-1/2	.1250 - .5000	1/4	3-1/8	C20286	C20296
1/4-3/4 x 1/16	1/4-3/4	.2500 - .7500	3/8	2-3/4	C20287	C20297
7/8-1 3/8	7/8-1 3/8	.8750 - 1.3750	3/8	3-1/4	C20290	—
7/8-1-1/8	7/8-1 1/8	.8750 - 1.1250	3/8	3-7/64	C20293	—

**METRIC SIZES**

Step Description	Hole Sizes	Decimal Equiv.	Shank Diameter	Overall Length	Style 1874 Bright	Style 1874TN TiN Coated
4.0 - 12.0 x 1.0	4.0 - 12.0	.1575 - .4724	6	65	C20305	C20315
4.0 - 20.0 x 2.0	4.0 - 20.0	.1575 - .7874	6	67	C20306	—
6.0 - 30.0 x 2.0	6.0 - 30.0	.2362 - 1.181	6	98	C20307	—

**SETS in METAL CASE**

Drilling Diameter Range	No. of Pieces	Style 1874 Bright	Style 1874TN TiN-Coated
3/16-3/4	3	C20325	C20326

**Quick Change Chucks**

**FEATURES**

- For use with 1/4" hex shank drills or for 1/4" and 3/8" shank drills
- Installs in 3/8" or larger chucks
- Converts standard power tool chucks to quick-change operation
- No chuck keys needed
- Black oxide finish



Style 1817 Item C20920 Quick Change Chuck insert



Style 1817 Item C20958 6" Quick-Drive Quick Change Chuck



Style 1817 Item C20957 12" Quick-Drive Quick Change Chuck

Description	Style 1817 EDP No.
Quick-change chuck insert converts standard chucks to quick-change operation	C20920
Quick-change chuck for 1/4" hex shank drills	C20955
Dual-drive quick change chuck for 1/4" and 3/8" hex shank tools	C20956
Extra length (6" OAL) quick-drive quick change chuck for 1/4" hex shank tools	C20958
Extra length (12" OAL) quick-drive quick change chuck for 1/4" hex shank tools	C20957



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**Double End**

**FEATURES**

- 135° split point for self-centering drill penetration
- HSS substrate
- Black oxide finish
- Made specifically for sheet metal and other thin materials having a thickness similar to the drill diameter



Style 1815 Black Oxide

**INCH SIZES**

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1815 Black Oxide
1/8	.1250	3.18	1.929	.433	C20500
#30	.1285	3.26	1.875	.500	C23811
9/64	.1406	3.57	2.047	.551	C17618
5/32	.1562	3.97	2.165	.551	C17619
#20	.1610	4.09	2.063	.625	C23810
3/16	.1875	4.76	2.441	.669	C20501
#11	.1910	4.85	2.344	.688	C23809
1/4	.2500	6.35	2.756	.787	C20503

**1/4" Hex Shank**

**FEATURES**

- Use in quick change chucks shown on page 39 for fast size changes
- HSS substrate
- 135° split point
- Bright finish



Style 1816 Bright

**INCH SIZES**

Drill Dia.	Decimal Equiv.	Metric Equiv.	Style 1816 Bright
1/16	.0625	1.59	C20510
5/64	.0781	1.98	C20511
3/32	.0938	2.38	C20512
7/64	.1094	2.78	C20513
1/8	.1250	3.18	C20514
9/64	.1406	3.57	C20516
5/32	.1562	3.97	C20517
3/16	.1875	4.76	C20518
7/32	.2188	5.56	C20908
1/4	.2500	6.35	C20909



**Rotary Rebar Cutter**

**FEATURES**

- For use when drilling through embedded rebar or wire mesh
- Designed for ROTARY ONLY drilling
- Can be used with new rotary chuck drivers in hammer motors



Style 1842 Bright Finish

- Converts any Spline Drive or SDS-Max Percussion Hammer into a rotary only drill motor

**ROTARY REBAR CUTTER SIZES**

Drill Dia.	Decimal Equiv.	Metric Equiv.	Shank Diameter	Overall Length	Style 1842 Bright
1/2	.5000	12.70	1/2	12	C19014
5/8	.6250	15.88	1/2	12	C19015
3/4	.7500	19.05	1/2	12	C19016
7/8	.8750	22.23	1/2	12	C19017
1	1.0000	25.40	1/2	12	C19018

**Rotary Chuck Drivers**



Style 1843 Item C19019 Spline Drive

**ROTARY CHUCK DRIVER MODELS**

Style No.	Style 1843 Bright
Spline Drive	C19019
SDS Max Drive	C19020

Use Cle-LINE rotary chuck drivers on these models:

	SPLINE DRIVE C19019	SDS MAX DRIVE C19020
AEG®	PH350, PH240, PH38, PHD26, PHD38	—
B & D®	5041, 5045, 5059, 5093, 5095, 5096, 5098	5097K, 5099K
Bosch®	11202, 11203, 11205, 11209, 11214, 11216, 11219, 11220, 11232	11214, 11216, 11223, 11227, 11230, 11231, 11309, 11311
Dewalt®	DW539, DW533	545
Hilti®	—	TEF52, TEY54, TEY55, TEF60, TEF72, TEY74, TEY75, TE76, TEF92, TEY94
Hitachi®	DH25, DH38YE, DH50SB	—
Kango®	950S, 637S, 501S, 430S, 728S, 750S, 978S	—
Makita®	HR3851, HR5000	—
Metabo®	RH-32, RH-33, RH-66, 1129, 1130, 6030	—
Milwaukee®	5311, 5312, 5316, 5317, 5334 5341, 5343, 5344, 5345-21, 5347, 5348, 5352, 5353	5308, 5313, 5346-21



**Rivet Hole Drills**

**FEATURES**

- 135° split point
- HSS substrate
- Black oxide finish
- Designed to drill rivet holes and other applications in thin sheet metal
- Ideal for hand drilling



Style 2184 Black Oxide

**INCH SIZES**

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 2184 Black Oxide
3/32	.0938	2.38	1-3/4	7/16	C20259
1/8	.1250	3.17	1-7/8	1/2	C20257
5/32	.1562	3.97	2-1/16	9/16	C20260
3/16	.1875	4.76	2-3/16	9/16	C20258
1/4	.2500	6.35	2-1/2	3/4	C20256

**Welding Point Drills**

**FEATURES**

- 135° split point
- HSS substrate - Style 2195
- Cobalt substrate - Style 2185, 2185F
- Black oxide finish - Style 2195
- Straw finish - Style 2185, 2185F
- Designed to drill rivet holes and other applications in thin sheet metal
- Ideal for hand drilling



Style 2195 HSS Black Oxide



Style 2185 Cobalt Straw Finish



Style 2185F Cobalt with Flats Straw Finish

**METRIC SIZES**

Drill Dia.	Decimal Equiv.	Overall Length	Flute Length	Style 2195 Black Oxide	Style 2185 Cobalt - Straw	Style 2185F Cobalt - Straw
6.0	.2362	66	28	C20988	C20478	C20878
6.5	.2559	70	31	—	—	C20877
8.0	.3150	79	37	C20989	C20479	C20879
10.0	.3937	89	43	C20990	C20480	C20880

**Power Wood Bits**

**FEATURES**

- Tool steel propeller shaped cutter head
- Unique Turbo Twist™ clears holes of chips
- Easy to sharpen
- 3 flats on shank



Style 1823 Black Oxide

**INCH SIZES**

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Style 1823 Black Oxide
1/4	.2500	6.35	6	C17100
5/16	.3125	7.94	6	C17101
3/8	.3750	9.53	6	C17102
7/16	.4375	11.11	6	C17103
1/2	.5000	12.70	6	C17104
9/16	.5625	14.29	6	C17105
5/8	.6250	15.88	6	C17106
11/16	.6875	17.46	6	C17107
3/4	.7500	19.05	6	C17108
13/16	.8125	20.64	6	C17109
7/8	.8750	22.23	6	C17110
15/16	.9375	23.81	6	C17111
1	1.0000	25.40	6	C17112
1-1/8	1.1250	28.58	6	C17113
1-1/4	1.2500	31.75	6	C17114
1-3/8	1.3750	34.93	6	C17115
1-1/2	1.5000	38.10	6	C17116

**Glass and Tile Carbide-Tipped Drill**

**FEATURES**

- Designed to drill into glass, mirror, china and ceramic tile
- Spear point produces clean, smooth finish
- Run at 25 SFM with moderate consistant feed



Style 1822 Bright Finish

**INCH SIZES**

Drill Dia.	Decimal Equiv.	Metric Equiv.	Style 1822 Bright
1/8	.1250	3.18	C20718
3/16	.1875	4.76	C20719
1/4	.2500	6.35	C20720
5/16	.3125	7.94	C20721
3/8	.3750	9.53	C20722
1/2	.5000	12.70	C20723

**SETS in METAL CASE**

Drill Sizes	No. of Pieces	Style 1822 Bright
1/8 – 1/2 x 1/8	4	C21148



**Combined Drill and Countersink**

**INCH SIZES**

- HSS substrate
- Bright finish
- Produces a 60° included angle center, used for most applications



Style 1824 Bright Finish

Size	Drill Diameter	Decimal Equiv.	Metric Equiv.	Body Diameter	Overall Length	Style 1824 Bright
0	1/32	.0312	0.79	1/8	1-1/8	C20891
1	3/64	.0469	1.19	1/8	1-1/4	C20892
2	5/64	.0781	1.98	3/16	1-7/8	C20893
3	7/64	.1094	2.78	1/4	2	C20894
4	1/8	.1250	3.18	5/16	2-1/8	C20895
5	3/16	.1875	4.76	7/16	2-3/4	C20896
6	7/32	.2188	5.56	1/2	3	C20897
7	1/4	.2500	6.35	5/8	3-1/4	C20898
8	5/16	.2344	5.95	3/4	3-1/2	C20899

**Die Drill**

**INCH SIZES**

- Made to ANSI tolerance
- Long carbide tip to prevent chipping, to improve cutting, and for better cooling
- Brazed tip for strength, performance and durability
- Special fluting for rapid chip evacuations and heat dissipation
- Specially tempered bodies for strength and longer tool life
- Designed for hardened steel
- Run at 75-100 SFM



Style 1844 Bright Finish

Drill Diameter	Decimal Equiv.	Metric Equiv.	Shank Diameter	Overall Length	Style 1844	
					Right-Hand	Left-Hand
3/16	.1875	4.76	3/16	3	C19000	C19005
1/4	.2500	6.35	1/4	4	C19001	C19006
1/4	.2500	6.35	1/4	6	C19002	C19007
5/16	.3125	7.94	1/4	4	C19003	C19008
3/8	.3750	9.53	3/8	4	C19004	C19009

**Screw Extractors**

**FEATURES**

- Removes broken cap screws, set screws, studs, bolts, pipe fittings and other threaded parts without damaging the threads in the hole



Style 1829 Bright Finish

**INCH SIZES**

Extractor Size	Small End Dia.	Large End Dia.	Length of Taper	Overall Length	Style 1829 Bright
1	.0625	.1562	3/4	2	C17170
2	.0860	.1800	3/4	2-3/8	C17171
3	.1250	.2500	1	2-3/4	C17172
4	.1875	.3125	1	3	C17173
5	.2500	.4375	1-1/2	3-3/8	C17174
6	.3750	.5938	1-3/4	3-3/4	C17176
7	.5000	.7812	2-1/4	4-1/8	C17178
8	.7500	1.0312	2-1/4	4-3/8	C17180

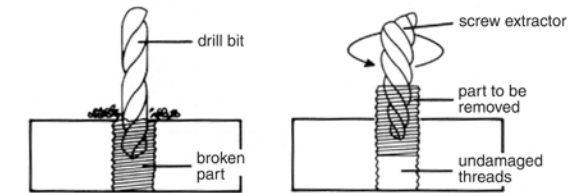
**SETS**

Size Ranges	No. of Pieces	Style 1829 Bright
in fold-up pouch #1 – #5	5	C21149

**HOW TO USE SCREW EXTRACTORS**

Screw extractors are used to remove broken screws, bolts, or other threaded parts. To remove a broken screw, follow this procedure.

- Drill a hole into the broken screw using the recommended drill size from the table at right.
- Insert the proper screw extractor into the hole and start a counter-clockwise (left-hand) rotation using a tap wrench on the square on the shank.
- The extractor will grip the wall of the hole in the screw and back the screw out without damaging the threads.
- A penetrating oil can be helpful in removing rusty or corroded parts.



Extractor Size	Use on This Size		Use Drill Size
	Screw or Bolt	Pipe	
1	#8 to 1/4	—	5/64
2	#12 to 5/16	—	7/64
3	5/16 to 7/16	—	5/32
4	7/16 to 9/16	1/8	1/4
5	9/16 to 3/4	1/8	17/64
6	3/4 to 1	3/8	13/32
7	1 to 1-3/8	—	17/32
8	1-3/8 to 1-3/4	3/4	13/16



**Jobber Length Drills in Metal Cases**  
These sets are also shown on the tool listing pages.

Size Range	No. of Pieces	Drill Style No.	Description	EDP No.
1/16" - 3/8" x 1/32"	11	1898	Bright, general purpose, 118° point	C21100
		1899	Black, general purpose, 118° point	C21101
		1898	Bright, general purpose, 118° point	C21104
		1899	Black, general purpose, 118° point	C21105
		1801	Heavy duty, 135° split point	C21157
1/16" - 1/4" x 1/64"	13	1878	Black & gold, heavy duty 135° split point	C18123
		1872	Heavy duty parabolic, 135° split point	C18619
		1872TN	TiN heavy duty parabolic, 135° split point	C18700
		1802	Cobalt heavy duty, 135° split point	C21107
		1898	Bright, general purpose, 118° point	C21108
		1899	Black, general purpose, 118° point	C21109
		1899	Black, general purpose, 3/8" shank, 118°	C21156
1/16" - 1/2" x 1/32"	15	1898T	TiN general purpose, 118° point	C19210
		1801	Heavy duty, 135° split point	C21110
		1878	Black & gold, heavy duty	C18124
		1872	Heavy duty parabolic, 135° split point	C18620
		1872TN	TiN heavy duty parabolic, 135° split point	C18701
		1873	Heavy duty parabolic 3/8" shank	C18719
		1802	Cobalt heavy duty, 135° split point	C21112
		1898	Bright, general purpose, 118° point	C21113
		1899	Black, general purpose, 118° point	C21114
		1801	Heavy duty, 135° split point	C21115
1/16" - 3/8" x 1/64"	21	1872	Heavy duty parabolic, 135° split point	C18621
		1872TN	TiN heavy duty parabolic, 135° split point	C18702
		1898	Bright, general purpose, 118° point	C21117
		1899	Black, general purpose, 118° point	C21118
		1809	Black, general purpose, 3/8" shank, 118°	C21159
1/16" - 1/2" x 1/64"	29	1898T	TiN, general purpose, 118° point	C19211
		1878	Black & Gold, Heavy Duty	C18125
		1878	*Bit Barrel™ black & gold, heavy duty	C18128
		1879	Black & Gold, Heavy Duty, 3/8" shank	C18122
		1801	Heavy Duty, 135° split	C21119
		1872	Heavy duty parabolic, 135° sp pt	C18622
		1872TN	TiN heavy duty parabolic, 135° split point	C18703
		1873	Heavy duty parabolic 3/8" shank	C18718
		1802	Cobalt heavy duty, 135° split	C21121
		1899	Black, general purpose, 118° point	C21158
		A - Z	26	1898
1899	Black, general purpose, 118° point			C21123
1801	Heavy duty, 135° split point			C21124
1802	Cobalt heavy duty, 135° split point			C21125
#1 - #60	60	1898	Bright, general purpose, 118° point	C21122
		1899	Black, general purpose, 118° point	C21123
		1801	Heavy duty, 135° split point	C21124
		1802	Cobalt heavy duty, 135° split point	C21125
1/16" - 1/2" x 1/64", #1-#60, A-Z	115	1898	Bright, general purpose, 118° point	C21126
		1899	Black, general purpose, 118° point	C21127
		1801	Heavy duty, 135° split point	C21128
		1802	Cobalt, 135° split point	C21129
1mm - 6mm x 0,5mm	11	1899	Black, 118° point	C21130
		1872	Heavy duty parabolic, 135° split point	C18626
		1872TN	TiN heavy duty parabolic, 135° split point	C18704
1mm - 10mm x 0,5mm	19	1898T	TiN, general purpose, 118° point	C24380
		1899	Black, general purpose, 118° point	C21131
1mm-13mm x 0,5mm	25	1898T	TiN, general purpose, 118° point	C24381
		1872	Heavy duty parabolic, 135° split point	C18628
		1872TN	TiN heavy duty parabolic, 135° split point	C18706
		1898	Bright, general purpose, 118° point	C18127

\*Bit Barrel case is plastic.



21-piece set Style 1898 EDP No.C21113



29-piece set Style 1872 EDP No.C18622



26-piece set Style 1899 EDP No.C21158



115-piece set Style 1899 EDP No.C21127



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**Other Drill Sets**

These sets are also shown on the tool listing pages.

Size Range	No. of Pieces	Drill Style No.	Description	EDP No.
<b>Mechanics length drills in metal case</b>				
1/16" - 1/4" x 1/64"	13	1875R	Black & gold, heavy duty, 135° split point	C18126
1/16" - 1/2" x 1/32"	15	1875R	Black & gold, heavy duty, 135° split point	C21160
1/16" - 3/8" x 1/64"	21	1875R	Black & gold, heavy duty, 135° split point	C21161
1/16" - 1/2" x 1/64"	29	1875R	Black & gold, heavy duty, 135° split point	C21162
	29	1875R	*Bit Barrel" black & gold, heavy duty	C21165
		1876	Black & gold, 3/8" shank, 135° split point	C21163

**Screw machine length drills in metal case**

1/16" - 1/2" x 1/64"	29	1896	Black heavy duty, 135° split point	C21133
#1 - #60	60	1896	Black heavy duty, 135° split point	C21947

**Silver & Deming drills in metal case**

9/16" - 1" x 1/16"	8	1813	1/2" reduced round shank, black	C21135
		1892	1/2" reduced shank with flats, black	C22761
		1877	1/2" reduced shank with flats, black & gold	C21164

9/16" - 1" x 1/16"	33	1813	1/2" reduced round shank, black	C21134
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**Step drill sets in metal case**

3/16 - 3/4"	3	1874	Bright, 118° split point	C20325
		1874	TiN, 118° split point	C20326

**Carbide-tipped masonry drills in metal case**

1/4, 5/16, 3/8, 1/2	4	1818	TCT carbide-tipped	C17003
		1889	TCT carbide-tipped	C23290

**Glass & Tile drill bit set**

1/8 - 1/2 x 1/8	4	1822	Spear point glass & tile drill bit	C21148
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**Screw Extractor Set in fold-up pouch**

#1 - #5	5	1829	Screw extractors	C21149
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**Drill Dispensers**

1/16" - 1/2"		1867		C23992
Letter A - Z		1867		C23993
#1 - #60		1867		C23994

\*Bit Barrel case is plastic.



15-piece set Style 1875 EDP No.C21160



8-piece set Style 1813 EDP No.C21135



5-piece set Style 1829 EDP No.C21149



Drill Dispenser EDP No.C23992

**CLE-FORCE™ Drill Sets**  
are listed on page 67



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**Contents**

The tradition of supplying quality tools continues with a new line of Cle-Force drills, sold by the same distributors who bring you the Cle-Line tools you depend on for your maintenance, repair, and operating requirements.

The Cle-Force high-speed steel and cobalt drills featured in this catalog deliver outstanding quality at a value price. They are made from top grade materials in modern, technologically advanced factories. From mining the ore to smelting the steel, to manufacturing the blanks, to final fabrication, these drills undergo stringent quality testing at every step of production.

Ask your Cle-Line distributor for Cle-Force drills. Test them against the tools you are currently using. We are sure you will be impressed with Cle-Force's performance, durability, and value.

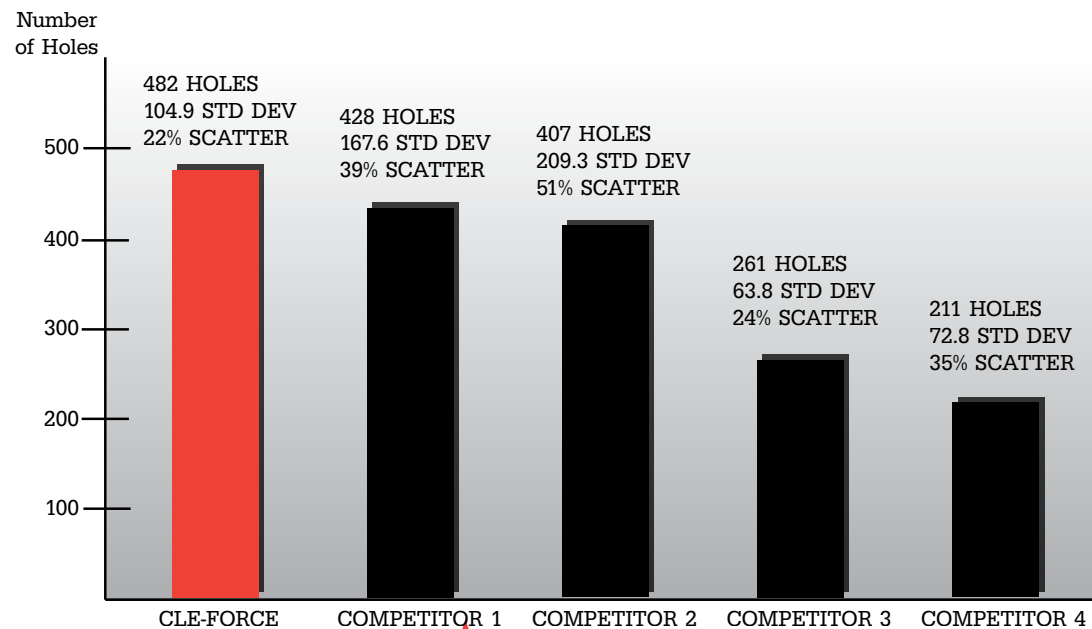
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1607	heavy duty, black & gold with flats on shanks	51-53
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1683	heavy duty, black oxide	66
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0700	carbide-tipped masonry, bright	67
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also listed on their individual drill pages		

**Test Results: General Purpose Jobber Drill, 118° Point, Black Oxide Surface Treatment**

**MACHINE.** . . . . . Toyoda FHN 40II - horizontal  
**SFM (RPM)** . . . . . 55SFM (840 RPM)  
**IPR (IPM)** . . . . . 0.005 IPR (4.20 IPM)

**MATERIAL** . . . . . 4340 alloy steel 32.8 HRc  
**HOLE DIMENSION** . . 0.500" through hole  
**COOLANT.** . . . . . Castrol Syntilo 9954 @10:1



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**Jobber Length**

**General Purpose Jobber Length**

**FEATURES**

- 118° point
- HSS substrate with general-purpose geometry
- Black oxide finish for increased wear resistance and improved lubricity
- Bright finish for nonferrous and low-tensile steel applications

- For general-purpose drilling and maintenance applications



**INCH SIZES**

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1600 Black Oxide	Style 1601 Bright
1/16	.0625	1.59	1-7/8	7/8	C68000	C68114
5/64	.0781	1.98	2	1	C68001	C68115
3/32	.0938	2.38	2-1/4	1-1/4	C68002	C68116
7/64	.1094	2.78	2-5/8	1-1/2	C68003	C68117
1/8	.1250	3.18	2-3/4	1-5/8	C68004	C68118
9/64	.1406	3.57	2-7/8	1-3/4	C68005	C68119
5/32	.1562	3.97	3-1/8	2	C68006	C68120
11/64	.1719	4.37	3-1/4	2-1/8	C68007	C68121
3/16	.1875	4.76	3-1/2	2-5/16	C68008	C68122
13/64	.2031	5.16	3-5/8	2-7/16	C68009	C68123
7/32	.2188	5.56	3-3/4	2-1/2	C68010	C68124
15/64	.2344	5.95	3-7/8	2-5/8	C68011	C68125
1/4	.2500	6.35	4	2-3/4	C68012	C68126
17/64	.2656	6.75	4-1/8	2-7/8	C68013	C68127
9/32	.2812	7.14	4-1/4	2-15/16	C68014	C68128
19/64	.2969	7.54	4-3/8	3-1/16	C68015	C68129
5/16	.3125	7.94	4-1/2	3-3/16	C68016	C68130
21/64	.3281	8.33	4-5/8	3-5/16	C68017	C68131
11/32	.3438	8.73	4-3/4	3-7/16	C68018	C68132
23/64	.3594	9.13	4-7/8	3-1/2	C68019	C68133
3/8	.3750	9.53	5	3-5/8	C68020	C68134
25/64	.3906	9.92	5-1/8	3-3/4	C68021	C68135
13/32	.4062	10.32	5-1/4	3-7/8	C68022	C68136
27/64	.4219	10.72	5-3/8	3-15/16	C68023	C68137
7/16	.4375	11.11	5-1/2	4-1/16	C68024	C68138
29/64	.4531	11.51	5-5/8	4-3/16	C68025	C68139
15/32	.4688	11.91	5-3/4	4-5/16	C68026	C68140
31/64	.4844	12.30	5-7/8	4-3/8	C68027	C68141
1/2	.5000	12.70	6	4-1/2	C68028	C68142

metric sizes and sets listed on next page



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# Jobber Length

## General Purpose Jobber Length (continued)

### METRIC SIZES

Drill Dia.	Decimal Equiv.	Overall Length	Flute Length	Style 1606 Black Oxide
1.0	.0394	34	12	C68606
1.5	.0591	40	18	C68607
2.0	.0787	49	24	C68608
2.5	.0984	57	30	C68609
3.0	.1181	61	33	C68610
3.5	.1378	70	39	C68611
4.0	.1575	75	43	C68612
4.5	.1772	80	47	C68613
5.0	.1969	86	52	C68614
5.5	.2165	93	57	C68615
6.0	.2362	93	57	C68616
6.5	.2559	101	63	C68617
7.0	.2756	109	69	C68618
7.5	.2953	109	69	C68619
8.0	.3150	117	75	C68620
8.5	.3346	117	75	C68621
9.0	.3543	125	81	C68622
9.5	.3740	125	81	C68623
10.0	.3937	133	87	C68624
10.5	.4134	133	87	C68625
11.0	.4331	142	94	C68626
11.5	.4528	142	94	C68627
12.0	.4724	151	101	C68628
12.5	.4921	151	101	C68629
13.0	.5118	151	101	C68630

### SETS

Drill Sizes	No. of Pieces	Case Style	Style 1600 Black Oxide
1/16" – 1/4" x 1/64"	13	metal	C69034
1/16" – 1/2" x 1/32"	15	plastic	C69035
1/16" – 3/8" x 1/64"	21	metal	C69036
1/16" – 1/2" x 1/64"	29	plastic	C69037
1mm – 13mm x 0.5mm	25	plastic	C69038

# Jobber Length

## Heavy Duty Jobber Length

### FEATURES

- 135° split point is self-centering for reduced thrust and easier penetration; preferred for stainless steels
- HSS substrate with heavy duty geometry
- Black oxide finish for increased lubricity and better wear resistance
- Black and gold finish for enhanced operation and long drill life
- Style 1607 drills feature 3 flats on shank for tighter chucking in portable drills
- Style 1605 drills available with 3/8" reduced shanks in larger sizes for 3/8" drill chucks
- For general purpose drilling and maintenance applications



Style 1602 Black Oxide



Style 1604 Black and Gold



Style 1607 Black and Gold with Flats on Shank



Style 1605 3/8" Reduced Shank Black and Gold

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1602 Black Oxide	Style 1604 Black and Gold	Style 1607 Black and Gold w/Flats
60*	.0400	1.02	1-5/8	11/16	C68342	—	—
59*	.0410	1.04	1-5/8	11/16	C68341	—	—
58*	.0420	1.07	1-5/8	11/16	C68340	—	—
57*	.0430	1.09	1-3/4	3/4	C68339	—	—
56*	.0465	1.18	1-3/4	3/4	C68338	—	—
55*	.0520	1.32	1-7/8	7/8	C68337	—	—
54*	.0550	1.40	1-7/8	7/8	C68336	—	—
53*	.0595	1.51	1-7/8	7/8	C68335	—	—
1/16	.0625	1.59	1-7/8	7/8	C68229	C69042	C69339
52	.0635	1.61	1-7/8	7/8	C68334	—	—
51	.0670	1.70	2	1	C68333	—	—
50	.0700	1.78	2	1	C68332	—	—
49	.0730	1.85	2	1	C68331	—	—
48	.0760	1.93	2	1	C68330	—	—
5/64	.0781	1.98	2	1	C68230	C69043	C69340
47	.0785	1.99	2	1	C68329	—	—
46	.0810	2.06	2-1/8	1-1/8	C68328	—	—
45	.0820	2.08	2-1/8	1-1/8	C68327	—	—
44	.0860	2.18	2-1/8	1-1/8	C68326	—	—
43	.0890	2.26	2-1/4	1-1/4	C68325	—	—
42	.0935	2.37	2-1/4	1-1/4	C68324	—	—
3/32	.0938	2.38	2-1/4	1-1/4	C68231	C69044	C69341
41	.0960	2.44	2-3/8	1-3/8	C68323	—	—
40	.0980	2.49	2-3/8	1-3/8	C68322	—	—
39	.0995	2.53	2-3/8	1-3/8	C68321	—	—
38	.1015	2.58	2-1/2	1-7/16	C68320	—	—
37	.1040	2.64	2-1/2	1-7/16	C68319	—	—
36	.1065	2.71	2-1/2	1-7/16	C68318	—	—
7/64	.1094	2.78	2-5/8	1-1/2	C68232	C69045	C69342
35	.1100	2.79	2-5/8	1-1/2	C68317	—	—
34	.1110	2.82	2-5/8	1-1/2	C68316	—	—
33	.1130	2.87	2-5/8	1-1/2	C68315	—	—
32	.1160	2.95	2-3/4	1-5/8	C68314	—	—
31	.1200	3.05	2-3/4	1-5/8	C68313	—	—
1/8	.1250	3.18	2-3/4	1-5/8	C68233	C69046	C69343
30	.1285	3.26	2-3/4	1-5/8	C68312	—	—

\*Not split point under 1/16".

continued on next page



# Jobber Length

## Heavy Duty Jobber Length (continued)

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1602 Black Oxide	Style 1604 Black and Gold	Style 1607 Black and Gold w/Flats
29	.1360	3.45	2-7/8	1-3/4	C68311	—	—
28	.1405	3.57	2-7/8	1-3/4	C68310	—	—
9/64	.1406	3.57	2-7/8	1-3/4	C68234	C69047	C69344
27	.1440	3.66	3	1-7/8	C68309	—	—
26	.1470	3.73	3	1-7/8	C68308	—	—
25	.1495	3.80	3	1-7/8	C68307	—	—
24	.1520	3.86	3-1/8	2	C68306	—	—
23	.1540	3.91	3-1/8	2	C68305	—	—
5/32	.1562	3.97	3-1/8	2	C68235	C69048	C69345
22	.1570	3.99	3-1/8	2	C68304	—	—
21	.1590	4.04	3-1/4	2-1/8	C68303	—	—
20	.1610	4.09	3-1/4	2-1/8	C68302	—	—
19	.1660	4.22	3-1/4	2-1/8	C68301	—	—
18	.1695	4.31	3-1/4	2-1/8	C68300	—	—
11/64	.1719	4.37	3-1/4	2-1/8	C68236	C69049	C69346
17	.1730	4.39	3-3/8	2-3/16	C68299	—	—
16	.1770	4.50	3-3/8	2-3/16	C68298	—	—
15	.1800	4.57	3-3/8	2-3/16	C68297	—	—
14	.1820	4.62	3-3/8	2-3/16	C68296	—	—
13	.1850	4.70	3-1/2	2-5/16	C68295	—	—
3/16	.1875	4.76	3-1/2	2-5/16	C68237	C69050	C69347
12	.1890	4.80	3-1/2	2-5/16	C68294	—	—
11	.1910	4.85	3-1/2	2-5/16	C68293	—	—
10	.1935	4.91	3-5/8	2-7/16	C68292	—	—
9	.1960	4.98	3-5/8	2-7/16	C68291	—	—
8	.1990	5.05	3-5/8	2-7/16	C68290	—	—
7	.2010	5.11	3-5/8	2-7/16	C68289	—	—
13/64	.2031	5.16	3-5/8	2-7/16	C68238	C69051	C69348
6	.2040	5.18	3-3/4	2-1/2	C68288	—	—
5	.2055	5.22	3-3/4	2-1/2	C68287	—	—
4	.2090	5.31	3-3/4	2-1/2	C68286	—	—
3	.2130	5.41	3-3/4	2-1/2	C68285	—	—
7/32	.2188	5.56	3-3/4	2-1/2	C68239	C69052	C69349
2	.2210	5.61	3-7/8	2-5/8	C68284	—	—
1	.2280	5.79	3-7/8	2-5/8	C68283	—	—
A	.2340	5.94	3-7/8	2-5/8	C68258	—	—
15/64	.2344	5.95	3-7/8	2-5/8	C68240	C69053	C69350
B	.2380	6.05	4	2-3/4	C68259	—	—
C	.2420	6.15	4	2-3/4	C68260	—	—
D	.2460	6.25	4	2-3/4	C68261	—	—
1/4, E	.2500	6.35	4	2-3/4	C68241	C69054	C69351
F	.2570	6.53	4-1/8	2-7/8	C68262	—	—
G	.2610	6.63	4-1/8	2-7/8	C68263	—	—
17/64	.2656	6.75	4-1/8	2-7/8	C68242	C69055	C69352
H	.2660	6.76	4-1/8	2-7/8	C68264	—	—
I	.2720	6.91	4-1/8	2-7/8	C68265	—	—
J	.2770	7.04	4-1/8	2-7/8	C68266	—	—
K	.2810	7.14	4-1/4	2-15/16	C68267	—	—
9/32	.2812	7.14	4-1/4	2-15/16	C68243	C69056	C69353
L	.2900	7.37	4-1/4	2-15/16	C68268	—	—
M	.2950	7.49	4-3/8	3-1/16	C68269	—	—
19/64	.2969	7.54	4-3/8	3-1/16	C68244	C69057	C69354

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# Jobber Length

## Heavy Duty Jobber Length (continued)

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1602 Black Oxide	Style 1604 Black and Gold	Style 1607 Black and Gold w/Flats
N	.3020	7.67	4-3/8	3-1/16	C68270	—	—
5/16	.3125	7.94	4-1/2	3-3/16	C68245	C69058	C69355
O	.3160	8.03	4-1/2	3-3/16	C68271	—	—
P	.3230	8.20	4-5/8	3-5/16	C68272	—	—
21/64	.3281	8.33	4-5/8	3-5/16	C68246	C69059	C69356
Q	.3320	8.43	4-3/4	3-7/16	C68273	—	—
R	.3390	8.61	4-3/4	3-7/16	C68274	—	—
11/32	.3438	8.73	4-3/4	3-7/16	C68247	C69060	C69357
S	.3480	8.84	4-7/8	3-1/2	C68275	—	—
T	.3580	9.09	4-7/8	3-1/2	C68276	—	—
23/64	.3594	9.13	4-7/8	3-1/2	C68248	C69061	C69358
U	.3680	9.35	5	3-5/8	C68277	—	—
3/8	.3750	9.53	5	3-5/8	C68249	C69062	C69359
V	.3770	9.58	5	3-5/8	C68278	—	—
W	.3860	9.80	5-1/8	3-3/4	C68279	—	—
25/64	.3906	9.92	5-1/8	3-3/4	C68250	C69063	C69360
X	.3970	10.08	5-1/8	3-3/4	C68280	—	—
Y	.4040	10.26	5-1/4	3-7/8	C68281	—	—
13/32	.4062	10.32	5-1/4	3-7/8	C68251	C69064	C69361
Z	.4130	10.49	5-1/4	3-7/8	C68282	—	—
27/64	.4219	10.72	5-3/8	3-15/16	C68252	C69065	C69362
7/16	.4375	11.11	5-1/2	4-1/16	C68253	C69066	C69363
29/64	.4531	11.51	5-5/8	4-3/16	C68254	C69067	C69364
15/32	.4688	11.91	5-3/4	4-5/16	C68255	C69068	C69365
31/64	.4844	12.30	5-7/8	4-3/8	C68256	C69069	C69366
1/2	.5000	12.70	6	4-1/2	C68257	C69070	C69367

### INCH SIZES WITH 3/8" SHANKS

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1605 Black and Gold
25/64	.3906	9.92	5-1/8	3-3/4	C69071
13/32	.4062	10.32	5-1/4	3-7/8	C69072
27/64	.4219	10.72	5-3/8	3-15/16	C69073
7/16	.4375	11.11	5-1/2	4-1/16	C69074
29/64	.4531	11.51	5-5/8	4-3/16	C69075
15/32	.4688	11.91	5-3/4	4-5/16	C69076
31/64	.4844	12.30	5-7/8	4-3/8	C69077
1/2	.5000	12.70	6	4-1/2	C69078

### SETS

Drill Sizes	No. of Pieces	Case Style	Style 1602 Black Oxide	Style 1604 Black & Gold	Style 1607 Black & Gold w/Flats	Style 1605 with 3/8" Shanks
1/16" - 1/4" x 1/64"	13	metal	C69381	C69030	C68343	—
1/16" - 1/2" x 1/32"	15	plastic	C69382	C69031	C68461	—
1/16" - 1/2" x 1/64"	29	plastic	C69383	C69032	C69368	C69033
1/16" - 1/2" x 1/64"	29	Bit Barrel	—	—	C69385	—



Bit Barrel™ Set C69385



Customer Service: 800.348.2885

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# Jobber Length

## Cobalt Heavy Duty Jobber Length

### FEATURES

- 135° split point for faster, easier drill penetration
- Industrial grade cobalt HSS construction
- Heavy duty geometry
- Straw color finish
- Designed to drill tough, high-tensile materials and work-hardening materials like high-strength alloy steels, stainless steel, titanium, manganese steel, armor plate, and inconel.



Style 1603 Straw Finish

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1603 Straw Finish
60*	.0400	1.02	1-5/8	11/16	C68460
59*	.0410	1.04	1-5/8	11/16	C68459
58*	.0420	1.07	1-5/8	11/16	C68458
57*	.0430	1.09	1-3/4	3/4	C68457
56*	.0465	1.18	1-3/4	3/4	C68456
55*	.0520	1.32	1-7/8	7/8	C68455
54*	.0550	1.40	1-7/8	7/8	C68454
53*	.0595	1.51	1-7/8	7/8	C68453
1/16	.0625	1.59	1-7/8	7/8	C68344
52	.0635	1.61	1-7/8	7/8	C68452
51	.0670	1.70	2	1	C68451
50	.0700	1.78	2	1	C68450
49	.0730	1.85	2	1	C68449
48	.0760	1.93	2	1	C68448
5/64	.0781	1.98	2	1	C68345
47	.0785	1.99	2	1	C68447
46	.0810	2.06	2-1/8	1-1/8	C68446
45	.0820	2.08	2-1/8	1-1/8	C68445
44	.0860	2.18	2-1/8	1-1/8	C68444
43	.0890	2.26	2-1/4	1-1/4	C68443
42	.0935	2.37	2-1/4	1-1/4	C68442
3/32	.0938	2.38	2-1/4	1-1/4	C68346
41	.0960	2.44	2-3/8	1-3/8	C68441
40	.0980	2.49	2-3/8	1-3/8	C68440
39	.0995	2.53	2-3/8	1-3/8	C68439
38	.1015	2.58	2-1/2	1-7/16	C68438
37	.1040	2.64	2-1/2	1-7/16	C68437
36	.1065	2.71	2-1/2	1-7/16	C68436
7/64	.1094	2.78	2-5/8	1-1/2	C68347
35	.1100	2.79	2-5/8	1-1/2	C68435
34	.1110	2.82	2-5/8	1-1/2	C68434
33	.1130	2.87	2-5/8	1-1/2	C68433
32	.1160	2.95	2-3/4	1-5/8	C68432
31	.1200	3.05	2-3/4	1-5/8	C68431
1/8	.1250	3.18	2-3/4	1-5/8	C68351
30	.1285	3.26	2-3/4	1-5/8	C68430

\*Not split point under 1/16".

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# Jobber Length

## Cobalt Heavy Duty Jobber Length (continued)

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1603 Straw Finish
29	.1360	3.45	2-7/8	1-3/4	C68429
28	.1405	3.57	2-7/8	1-3/4	C68428
9/64	.1406	3.57	2-7/8	1-3/4	C68352
27	.1440	3.66	3	1-7/8	C68427
26	.1470	3.73	3	1-7/8	C68426
25	.1495	3.80	3	1-7/8	C68425
24	.1520	3.86	3-1/8	2	C68424
23	.1540	3.91	3-1/8	2	C68423
5/32	.1562	3.97	3-1/8	2	C68353
22	.1570	3.99	3-1/8	2	C68422
21	.1590	4.04	3-1/4	2-1/8	C68421
20	.1610	4.09	3-1/4	2-1/8	C68420
19	.1660	4.22	3-1/4	2-1/8	C68419
18	.1695	4.31	3-1/4	2-1/8	C68418
11/64	.1719	4.37	3-1/4	2-1/8	C68354
17	.1730	4.39	3-3/8	2-3/16	C68417
16	.1770	4.50	3-3/8	2-3/16	C68416
15	.1800	4.57	3-3/8	2-3/16	C68415
14	.1820	4.62	3-3/8	2-3/16	C68414
13	.1850	4.70	3-1/2	2-5/16	C68413
3/16	.1875	4.76	3-1/2	2-5/16	C68355
12	.1890	4.80	3-1/2	2-5/16	C68412
11	.1910	4.85	3-1/2	2-5/16	C68411
10	.1935	4.91	3-5/8	2-7/16	C68410
9	.1960	4.98	3-5/8	2-7/16	C68409
8	.1990	5.05	3-5/8	2-7/16	C68408
7	.2010	5.11	3-5/8	2-7/16	C68407
13/64	.2031	5.16	3-5/8	2-7/16	C68356
6	.2040	5.18	3-3/4	2-1/2	C68406
5	.2055	5.22	3-3/4	2-1/2	C68405
4	.2090	5.31	3-3/4	2-1/2	C68404
3	.2130	5.41	3-3/4	2-1/2	C68403
7/32	.2188	5.56	3-3/4	2-1/2	C68357
2	.2210	5.61	3-7/8	2-5/8	C68402
1	.2280	5.79	3-7/8	2-5/8	C68401
A	.2340	5.94	3-7/8	2-5/8	C68376
15/64	.2344	5.95	3-7/8	2-5/8	C68358
B	.2380	6.05	4	2-3/4	C68377
C	.2420	6.15	4	2-3/4	C68378
D	.2460	6.25	4	2-3/4	C68379
1/4, E	.2500	6.35	4	2-3/4	C68359
F	.2570	6.53	4-1/8	2-7/8	C68380
G	.2610	6.63	4-1/8	2-7/8	C68381
17/64	.2656	6.75	4-1/8	2-7/8	C68360
H	.2660	6.76	4-1/8	2-7/8	C68382
I	.2720	6.91	4-1/8	2-7/8	C68383
J	.2770	7.04	4-1/8	2-7/8	C68384
K	.2810	7.14	4-1/4	2-15/16	C68385

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# Jobber Length

## Cobalt Heavy Duty Jobber Length (continued)

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1603 Straw Finish
9/32	.2812	7.14	4-1/4	2-15/16	C68361
L	.2900	7.37	4-1/4	2-15/16	C68386
M	.2950	7.49	4-3/8	3-1/16	C68387
19/64	.2969	7.54	4-3/8	3-1/16	C68362
N	.3020	7.67	4-3/8	3-1/16	C68388
5/16	.3125	7.94	4-1/2	3-3/16	C68363
O	.3160	8.03	4-1/2	3-3/16	C68389
P	.3230	8.20	4-5/8	3-5/16	C68390
21/64	.3281	8.33	4-5/8	3-5/16	C68364
Q	.3320	8.43	4-3/4	3-7/16	C68391
R	.3390	8.61	4-3/4	3-7/16	C68392
11/32	.3438	8.73	4-3/4	3-7/16	C68365
S	.3480	8.84	4-7/8	3-1/2	C68393
T	.3580	9.09	4-7/8	3-1/2	C68394
23/64	.3594	9.13	4-7/8	3-1/2	C68366
U	.3680	9.35	5	3-5/8	C68395
3/8	.3750	9.53	5	3-5/8	C68367
V	.3770	9.58	5	3-5/8	C68396
W	.3860	9.80	5-1/8	3-3/4	C68397
25/64	.3906	9.92	5-1/8	3-3/4	C68368
X	.3970	10.08	5-1/8	3-3/4	C68398
Y	.4040	10.26	5-1/4	3-3/4	C68399
13/32	.4062	10.32	5-1/4	3-7/8	C68369
Z	.4130	10.49	5-1/4	3-7/8	C68400
27/64	.4219	10.72	5-3/8	3-15/16	C68370
7/16	.4375	11.11	5-1/2	4-1/16	C68371
29/64	.4531	11.51	5-5/8	4-3/16	C68372
15/32	.4688	11.91	5-3/4	4-5/16	C68373
31/64	.4844	12.30	5-7/8	4-3/8	C68374
1/2	.5000	12.70	6	4-1/2	C68375

### SETS

No. of Drill Sizes	Case Pieces	Case Style	Style 1603 Cobalt
1/16" – 1/4" x 1/64"	13	metal	C69377
1/16" – 1/2" x 1/32"	15	metal	C69378
1/16" – 1/2" x 1/64"	29	metal	C69379
#1 – #60	60	metal	C69380

# Mechanics Length

## Heavy Duty Mechanics Length

### FEATURES

- 135° split point is self-centering for reduced thrust and easier penetration; preferred for stainless steels
- HSS substrate with heavy duty geometry
- Black and gold finish for enhanced operation and long drill life
- Sizes above 11/64" feature three flats for tighter chucking
- For superior rigidity in general purpose drilling and maintenance applications



Style 1620 Right-Hand Helix Black and Gold

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1620 Black and Gold
1/16*	.0625	1.59	1-7/8	7/8	C68462
5/64*	.0781	1.98	2	1	C68463
3/32*	.0938	2.38	2-1/4	1-1/4	C68464
7/64*	.1094	2.78	2-3/8	1-5/16	C68465
1/8*	.1250	3.18	2-1/2	1-7/16	C68466
9/64*	.1406	3.57	2-5/8	1-9/16	C68467
5/32*	.1562	3.97	2-3/4	1-11/16	C68468
11/64*	.1719	4.37	2-7/8	1-13/16	C68469
3/16	.1875	4.76	3	1-7/8	C68470
13/64	.2031	5.16	3-1/8	1-15/16	C68471
7/32	.2188	5.56	3-1/4	2	C68472
15/64	.2344	5.95	3-3/8	2-1/16	C68473
1/4	.2500	6.35	3-1/2	2	C68474
17/64	.2656	6.75	3-5/8	2-1/8	C68475
9/32	.2812	7.14	3-3/4	2-1/4	C68476
19/64	.2969	7.54	3-7/8	2-3/8	C68477
5/16	.3125	7.94	4	2-1/2	C68478
21/64	.3281	8.33	4-1/16	2-9/16	C68479
11/32	.3438	8.73	4-1/8	2-5/8	C68480
23/64	.3594	9.13	4-3/16	2-11/16	C68481
3/8	.3750	9.53	4-1/4	2-11/16	C68482
25/64	.3906	9.92	4-5/16	2-3/4	C68483
13/32	.4062	10.32	4-3/8	2-13/16	C68484
27/64	.4219	10.72	4-7/16	2-7/8	C68485
7/16	.4375	11.11	4-1/2	2-15/16	C68486
29/64	.4531	11.51	4-5/8	3	C68487
15/32	.4688	11.91	4-3/4	3-1/8	C68488
31/64	.4844	12.30	4-7/8	3-1/4	C68489
1/2	.5000	12.70	5	3-3/8	C68490

\* No flats on shank

### SETS

Drill Sizes	No. of Pieces	Case Style	Style 1620 Black & Gold	Bit Barrel™ Black & Gold
1/16" – 1/4" x 1/64"	13	metal	C69029	–
1/16" – 1/2" x 1/64"	29	plastic	C69041	C69384



Bit Barrel Set C69384

# Screw Machine Length

## Heavy Duty Screw Machine Length

### FEATURES

- 135° split point for faster, easier drill penetration
- HSS substrate and heavy duty geometry
- Short flutes for rigid, strong tools
- Black oxide finish for increased wear resistance and improved lubricity; reduces chip welding and galling
- Superior rigidity in hand or machine drilling



Style 1621 Black Oxide

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1621 Black Oxide
1/16	.0625	1.59	1-5/8	5/8	C68491
5/64	.0781	1.98	1-11/16	11/16	C68492
3/32	.0938	2.38	1-3/4	3/4	C68493
7/64	.1094	2.78	1-13/16	13/16	C68494
1/8	.1250	3.18	1-7/8	7/8	C68495
9/64	.1406	3.57	1-15/16	15/16	C68496
5/32	.1562	3.97	2-1/16	1	C68497
11/64	.1719	4.37	2-1/8	1-1/16	C68498
3/16	.1875	4.76	2-3/16	1-1/8	C68499
13/64	.2031	5.16	2-1/4	1-3/16	C68500
7/32	.2188	5.56	2-3/8	1-1/4	C68501
15/64	.2344	5.95	2-7/16	1-5/16	C68502
1/4	.2500	6.35	2-1/2	1-3/8	C68503
17/64	.2656	6.75	2-5/8	1-7/16	C68504
9/32	.2812	7.14	2-11/16	1-1/2	C68505
19/64	.2969	7.54	2-3/4	1-9/16	C68506
5/16	.3125	7.94	2-13/16	1-5/8	C68507
21/64	.3281	8.33	2-15/16	1-11/16	C68508
11/32	.3438	8.73	3	1-11/16	C68509
23/64	.3594	9.13	3-1/16	1-3/4	C68510
3/8	.3750	9.53	3-1/8	1-13/16	C68511
25/64	.3906	9.92	3-1/4	1-7/8	C68512
13/32	.4062	10.32	3-5/16	1-15/16	C68513
27/64	.4219	10.72	3-3/8	2	C68514
7/16	.4375	11.11	3-7/16	2-1/16	C68515
29/64	.4531	11.51	3-9/16	2-1/8	C68516
15/32	.4688	11.91	3-5/8	2-1/8	C68517
31/64	.4844	12.30	3-11/16	2-3/16	C68518
1/2	.5000	12.70	3-3/4	2-1/4	C68519

# Extended Length

## 6" and 12" Aircraft Extension Length

### FEATURES

- General purpose jobber length flute construction with longer shank lengths for extended reach
- Available in 6" and 12" overall lengths
- 135° split point for faster drill penetration
- HSS substrate
- Black oxide finish for increased wear resistance and improved lubricity



Style 1630 6" OAL Black Oxide



Style 1631 12" OAL Black Oxide

### INCH SIZES

Drill Dia.	Decimal Equiv.	Metric Equiv.	Flute Length	Style 1630 6" Overall Black Oxide	Style 1631 12" Overall Black Oxide
1/16	.0625	1.59	7/8	C68867	C68936
5/64	.0781	1.98	1	C68868	C68937
3/32	.0938	2.38	1-1/4	C68869	C68938
40	.0980	2.49	1-3/8	C68935	C69004
39	.0995	2.53	1-3/8	C68934	C69003
38	.1015	2.58	1-7/16	C68933	C69002
37	.1040	2.64	1-7/16	C68932	C69001
36	.1065	2.71	1-7/16	C68931	C69000
7/64	.1094	2.78	1-1/2	C68870	C68939
35	.1100	2.79	1-1/2	C68930	C68999
34	.1110	2.82	1-1/2	C68929	C68998
33	.1130	2.87	1-1/2	C68928	C68997
32	.1160	2.95	1-5/8	C68927	C68996
31	.1200	3.05	1-5/8	C68926	C68995
1/8	.1250	3.18	1-5/8	C68871	C68940
30	.1285	3.26	1-5/8	C68925	C68994
29	.1360	3.45	1-3/4	C68924	C68993
28	.1405	3.57	1-3/4	C68923	C68992
9/64	.1406	3.57	1-3/4	C68872	C68941
27	.1440	3.66	1-7/8	C68922	C68991
26	.1470	3.73	1-7/8	C68921	C68990
25	.1495	3.80	1-7/8	C68920	C68989
24	.1520	3.86	2	C68919	C68988
23	.1540	3.91	2	C68918	C68987
5/32	.1562	3.97	2	C68873	C68942
22	.1570	3.99	2	C68917	C68986
21	.1590	4.04	2-1/8	C68916	C68985
20	.1610	4.09	2-1/8	C68915	C68984
19	.1660	4.22	2-1/8	C68914	C68983
18	.1695	4.31	2-1/8	C68913	C68982
11/64	.1719	4.37	2-1/8	C68874	C68943
17	.1730	4.39	2-3/16	C68912	C68981
16	.1770	4.50	2-3/16	C68911	C68980
15	.1800	4.57	2-3/16	C68910	C68979
14	.1820	4.62	2-3/16	C68909	C68978
13	.1850	4.70	2-5/16	C68908	C68977
3/16	.1875	4.76	2-5/16	C68875	C68944
12	.1890	4.80	2-5/16	C68907	C68976
11	.1910	4.85	2-5/16	C68906	C68975
10	.1935	4.91	2-7/16	C68905	C68974

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**Extended Length**

**6" and 12" Aircraft Extension Length (continued)**

**INCH SIZES**

Drill Dia.	Decimal Equiv.	Metric Equiv.	Flute Length	Style 1630 6" Overall Black Oxide	Style 1631 12" Overall Black Oxide
9	.1960	4.98	2-7/16	C68904	C68973
8	.1990	5.05	2-7/16	C68903	C68972
7	.2010	5.11	2-7/16	C68902	C68971
13/64	.2031	5.16	2-7/16	C68876	C68945
6	.2040	5.18	2-1/2	C68901	C68970
5	.2055	5.22	2-1/2	C68900	C68969
4	.2090	5.31	2-1/2	C68899	C68968
3	.2130	5.41	2-1/2	C68898	C68967
7/32	.2188	5.56	2-1/2	C68877	C68946
2	.2210	5.61	2-5/8	C68897	C68966
1	.2280	5.79	2-5/8	C68896	C68965
15/64	.6844	5.95	2-5/8	C68878	C68947
1/4	.2500	6.35	2-3/4	C68879	C68948
17/64	.2656	6.75	2-5/8	C68880	C68949
9/32	.2812	7.14	3-1/16	C68881	C68950
19/64	.2969	7.54	3-1/16	C68882	C68951
5/16	.3125	7.94	3-3/16	C68883	C68952
21/64	.3281	8.33	3-7/16	C68884	C68953
11/32	.3438	8.73	3-7/16	C68885	C68954
23/64	.3594	9.13	3-1/2	C68886	C68955
3/8	.3750	9.53	3-5/8	C68887	C68956
25/64	.3906	9.92	3-3/4	C68888	C68957
13/32	.4062	10.32	3-3/4	C68889	C68958
27/64	.4219	10.72	3-15/16	C68890	C68959
7/16	.4375	11.11	4-1/16	C68891	C68960
29/64	.4531	11.51	4-3/16	C68892	C68961
15/32	.4688	11.91	4-5/16	C68893	C68962
31/64	.4844	12.30	4-3/8	C68894	C68963
1/2	.5000	12.70	4-1/2	C68895	C68964

**Taper Shank**

**General Purpose Taper Shank**

**FEATURES**

- General purpose geometry with standard Morse taper shank dimensions
- HSS substrate engineered for toughness and ideal for portable drilling and maintenance applications
- 118° point for general purpose use
- Black oxide finish for increased wear resistance and improved lubricity, reduced chip welding, and galling
- Oversize and undersize shanks available in selected sizes



Style 1682 Black Oxide

**INCH SIZES**

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Morse Taper Number	Style 1682 Black Oxide
5/16	.3125	7.94	6-3/8	3-1/8	1	C68779
21/64	.3281	8.33	6-1/2	3-1/4	1	C68780
11/32	.3438	8.73	6-1/2	3-1/4	1	C68781
23/64	.3594	9.13	6-3/4	3-1/2	1	C68782
3/8	.3750	9.53	6-3/4	3-1/2	1	C68794
3/8	.3750	9.53	7-3/8	3-1/2	2	C68738
25/64	.3906	9.92	7	3-5/8	1	C68795
25/64	.3906	9.92	7	3-5/8	2	C68739
13/32	.4062	10.32	7	3-5/8	1	C68796
13/32	.4063	10.32	7-1/2	3-5/8	2	C68740
27/64	.4219	10.72	7-1/4	3-7/8	1	C68797
27/64	.4219	10.72	7-3/4	3-7/8	2	C68741
7/16	.4375	11.11	7-1/4	3-7/8	1	C68798
7/16	.4375	11.11	7-3/4	3-7/8	2	C68742
29/64	.4531	11.51	7-1/2	4-1/8	1	C68799
29/64	.4531	11.51	8	4-1/8	2	C68743
15/32	.4688	11.91	7-1/2	4-1/8	1	C68800
31/64	.4844	12.30	8-1/4	4-3/8	2	C68801
1/2	.5000	12.70	7-3/4	4-3/8	1	C68744
1/2	.5000	12.70	8-1/4	4-3/8	2	C68802
33/64	.5156	13.10	8-1/2	4-5/8	2	C68803
17/32	.5312	13.49	8	4-5/8	1	C68745
17/32	.5312	13.49	8-1/2	4-5/8	2	C68804
35/64	.5469	13.89	8-3/4	4-7/8	2	C68805
9/16	.5625	14.29	8-3/4	4-7/8	2	C68806
37/64	.5781	14.68	8-3/4	4-7/8	2	C68807
19/32	.5938	15.08	8-3/4	4-7/8	2	C68808
39/64	.6094	15.48	8-3/4	4-7/8	2	C68809
5/8	.6250	15.88	8-3/4	4-7/8	2	C68810
41/64	.6406	16.27	9	5-1/8	2	C68811
21/32	.6562	16.67	9	5-1/8	2	C68812
21/32	.6562	16.67	9-3/4	5-1/8	3	C68746
43/64	.6719	17.07	9-1/4	5-3/8	2	C68813
11/16	.6875	17.46	9-1/4	5-3/8	2	C68814
11/16	.6875	17.46	10	5-3/8	3	C68747
45/64	.7031	17.86	9-1/2	5-5/8	2	C68815
23/32	.7188	18.26	9-1/2	5-5/8	2	C68816
47/64	.7344	18.65	9-3/4	5-7/8	2	C68817
3/4	.7500	19.05	9-3/4	5-7/8	2	C68818
3/4	.7500	19.05	10-1/2	5-7/8	3	C68748

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**Taper Shank**

**General Purpose Taper Shank (continued)**

**INCH SIZES**

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Morse Taper Number	Style 1682 Black Oxide
49/64	.7656	19.45	9-7/8	6	2	C68819
49/64	.7656	19.45	10-5/8	6	3	C68749
25/32	.7812	19.84	9-7/8	6	2	C68820
25/32	.7812	19.84	10-5/8	6	3	C68750
51/64	.7969	20.24	10-3/4	6-1/8	3	C68821
13/16	.8125	20.64	10	6-1/8	2	C68751
13/16	.8125	20.64	10-3/4	6-1/8	3	C68822
53/64	.8281	21.03	10-3/4	6-1/8	3	C68823
27/32	.8438	21.43	10	6-1/8	2	C68752
27/32	.8438	21.43	10-3/4	6-1/8	3	C68824
55/64	.8594	21.83	10-3/4	6-1/8	3	C68825
7/8	.8750	22.23	10	6-1/8	2	C68753
7/8	.8750	22.23	10-3/4	6-1/8	3	C68826
57/64	.8906	22.62	10-3/4	6-1/8	3	C68827
29/32	.9062	23.02	10-3/4	6-1/8	3	C68828
59/64	.9219	23.42	10-3/4	6-1/8	3	C68829
15/16	.9375	23.81	10-3/4	6-1/8	3	C68830
61/64	.9531	24.21	11	6-3/8	3	C68831
31/32	.9688	24.61	11	6-3/8	3	C68832
63/64	.9844	25.00	11	6-3/8	3	C68833
1	1.0000	25.40	11	6-3/8	3	C68834
1	1.0000	25.40	12	6-3/8	4	C68754
1-1/64	1.0156	25.80	11-1/8	6-1/2	3	C68835
1-1/32	1.0312	26.19	11-1/4	6-5/8	3	C68836
1-3/64	1.0469	26.59	11-1/4	6-5/8	3	C68837
1-1/16	1.0625	26.99	11-1/4	6-5/8	3	C68838
1-1/16	1.0625	26.99	12-1/4	6-5/8	4	C68755
1-5/64	1.0781	27.38	12-1/2	6-7/8	4	C68839
1-3/32	1.0938	27.78	11-1/2	6-7/8	3	C68756
1-3/32	1.0938	27.78	12-1/2	6-7/8	4	C68840
1-7/64	1.1094	28.18	11-3/4	7-1/8	3	C68757
1-7/64	1.1094	28.18	12-3/4	7-1/8	4	C68841
1-1/8	1.1250	28.58	11-3/4	7-1/8	3	C68758
1-1/8	1.1250	28.58	12-3/4	7-1/8	4	C68842
1-9/64	1.1406	28.97	12-7/8	7-1/4	4	C68843
1-5/32	1.1562	29.37	11-7/8	7-1/4	3	C68759
1-5/32	1.1562	29.37	12-7/8	7-1/4	4	C68844
1-11/64	1.1719	29.77	13	7-3/8	4	C68845
1-3/16	1.1875	30.16	12	7-3/8	3	C68760
1-3/16	1.1875	30.16	13	7-3/8	4	C68846
1-13/64	1.2031	30.56	13-1/8	7-1/2	4	C68847
1-7/32	1.2188	30.96	13-1/8	7-1/2	4	C68848
1-15/64	1.2344	31.35	13-1/2	7-7/8	4	C68849
1-1/4	1.2500	31.75	12-1/2	7-7/8	3	C68761
1-1/4	1.2500	31.75	13-1/2	7-7/8	4	C68850
1-17/64	1.2656	32.15	14-1/8	8-1/2	4	C68851
1-9/32	1.2812	32.54	14-1/8	8-1/2	4	C68852
1-19/64	1.2969	32.94	14-1/4	8-5/8	4	C68853
1-5/16	1.3125	33.34	14-1/4	8-5/8	4	C68854

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Customer Service: 800.348.2885

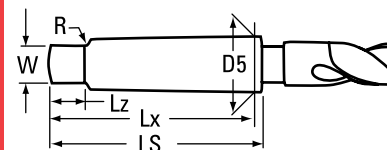
**Taper Shank**

**General Purpose Taper Shank (continued)**

**INCH SIZES**

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Morse Taper Number	Style 1682 Black Oxide
1-21/64	1.3281	33.73	14-3/8	8-3/4	4	C68855
1-11/32	1.3438	34.13	14-3/8	8-3/4	4	C68856
1-23/64	1.3594	34.53	14-1/2	8-7/8	4	C68857
1-3/8	1.3750	34.93	14-1/2	8-7/8	4	C68858
1-25/64	1.3906	35.32	14-5/8	9	4	C68859
1-13/32	1.4062	35.72	14-5/8	9	4	C68860
1-27/64	1.4219	36.12	14-3/4	9-1/8	4	C68861
1-7/16	1.4375	36.51	14-3/4	9-1/8	4	C68862
1-29/64	1.4531	36.91	14-7/8	9-1/4	4	C68863
1-15/32	1.4688	37.31	14-7/8	9-1/4	4	C68864
1-31/64	1.4844	37.70	15	9-3/8	4	C68865
1-1/2	1.5000	38.10	15	9-3/8	4	C68866
1-17/32	1.5312	38.89	15	9-3/8	4	C68762
1-17/32	1.5312	38.89	16-3/8	9-3/8	5	C68783
1-9/16	1.5625	39.69	16-5/8	9-5/8	5	C68784
1-19/32	1.5938	40.48	16-7/8	9-7/8	5	C68785
1-5/8	1.6250	41.28	15-5/8	10	4	C68763
1-5/8	1.6250	41.28	17	10	5	C68786
1-21/32	1.6562	42.07	17-1/8	10-1/8	5	C68787
1-11/16	1.6875	42.86	17-1/8	10-1/8	5	C68788
1-23/32	1.7188	43.66	17-1/8	10-1/8	5	C68764
1-3/4	1.7500	44.45	16-1/4	10-3/8	4	C68765
1-3/4	1.7500	44.45	17-1/8	10-3/8	5	C68789
1-13/16	1.8125	46.04	17-1/8	10-1/8	5	C68790
1-7/8	1.8750	47.63	17-3/8	10-3/8	5	C68791
1-15/16	1.9375	49.21	17-3/8	10-3/8	5	C68792
2	2.0000	50.80	16-5/8	10-5/8	4	C68766
2	2.0000	50.80	17-3/8	10-3/8	5	C68793

**Morse Taper Shank Specifications**



Morse Taper Shank No.	Taper per Foot	Taper per Inch	Max Shank Diameter	LS Length of Shank	D5 Shank Lngth to Gage Line	Lz Length of Tang	W Thickness of Tang	R Radius
1	.5985	.0498	.475	2.56	2.44	.37	.20	.19
2	.5994	.0499	.700	3.12	2.94	.44	.25	.25
3	.6023	.0501	.938	3.87	3.69	.56	.31	.28
4	.6232	.0519	1.231	4.87	4.62	.62	.47	.31
5	.6315	.0526	1.749	6.12	5.87	.75	.62	.37
6	.6256	.0521	2.494	8.56	8.25	1.12	.75	.50



Customer Service: 800.348.2885



**Reduced Shank**

**1/2" Reduced Shank Silver & Deming**

**FEATURES**

- Style 1680
  - 118° point
  - round 1/2" reduced shank
  - Black oxide finish
  - HSS substrate
- Style 1681
  - 118° point
  - 3 flats on 1/2" reduced shank
  - Black oxide finish
  - HSS substrate



Style 1680 Black Oxide with Round Shank



Style 1681 Black Oxide with Flatted Shank

**INCH SIZES**

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1680 Round Shank	Style 1681 Shank w/Flats
1/2	.5000	12.70	6	3-1/8	C68631	C68674
33/64	.5156	13.10	6	3-1/8	C68632	C68675
17/32	.5312	13.49	6	3-1/8	C68633	C68676
35/64	.5469	13.89	6	3-1/8	C68634	C68677
9/16	.5625	14.29	6	3-1/8	C68635	C68678
37/64	.5781	14.68	6	3-1/8	C68636	C68679
19/32	.5938	15.08	6	3-1/8	C68637	C68680
39/64	.6094	15.48	6	3-1/8	C68638	C68681
5/8	.6250	15.88	6	3-1/8	C68639	C68682
41/64	.6406	16.27	6	3-1/8	C68640	C68683
21/32	.6562	16.67	6	3-1/8	C68641	C68684
43/64	.6719	17.07	6	3-1/8	C68642	C68685
11/16	.6875	17.46	6	3-1/8	C68643	C68686
45/64	.7031	17.86	6	3-1/8	C68644	C68687
23/32	.7188	18.26	6	3-1/8	C68645	C68688
47/64	.7344	18.65	6	3-1/8	C68646	C68689
3/4	.7500	19.05	6	3-1/8	C68647	C68690
49/64	.7656	19.45	6	3-1/8	C68648	C68691
25/32	.7812	19.84	6	3-1/8	C68649	C68692
51/64	.7969	20.24	6	3-1/8	C68650	C68693
13/16	.8125	20.64	6	3-1/8	C68651	C68694
53/64	.8281	21.03	6	3-1/8	C68652	C68695
27/32	.8438	21.43	6	3-1/8	C68653	C68696
55/64	.8594	21.83	6	3-1/8	C68654	C68697
7/8	.8750	22.23	6	3-1/8	C68655	C68698
57/64	.8906	22.62	6	3-1/8	C68656	C68699
29/32	.9062	23.02	6	3-1/8	C68657	C68700
59/64	.9219	23.42	6	3-1/8	C68658	C68701
15/16	.9375	23.81	6	3-1/8	C68659	C68702
61/64	.9531	24.21	6	3-1/8	C68660	C68703
31/32	.9688	24.61	6	3-1/8	C68661	C68704
63/64	.9844	25.00	6	3-1/8	C68662	C68705
1	1.0000	25.40	6	3-1/8	C68663	C68706
1-1/64	1.0156	25.80	6	3-1/8	—	C68707
1-1/32	1.0312	26.19	6	3-1/8	C68664	C68708
1-3/64	1.0469	26.59	6	3-1/8	—	C68709

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**Reduced Shank**

**1/2" Reduced Shank Silver & Deming (continued)**

**INCH SIZES**

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1680 Round Shank	Style 1681 Shank w/Flats
1-1/16	1.0625	26.99	6	3-1/8	C68665	C68710
1-5/64	1.0781	27.38	6	3-1/8	—	C68711
1-3/32	1.0938	27.78	6	3-1/8	—	C68712
1-7/64	1.1094	28.18	6	3-1/8	—	C68713
1-1/8	1.1250	28.58	6	3-1/8	C68666	C68714
1-9/64	1.1406	28.97	6	3-1/8	—	C68715
1-5/32	1.1562	29.37	6	3-1/8	C68667	C68716
1-11/64	1.1719	29.77	6	3-1/8	—	C68717
1-3/16	1.1875	30.16	6	3-1/8	C68668	C68718
1-13/64	1.2031	30.56	6	3-1/8	—	C68719
1-7/32	1.2188	30.96	6	3-1/8	—	C68720
1-15/64	1.2344	31.35	6	3-1/8	—	C68721
1-1/4	1.2500	31.75	6	3-1/8	C68669	C68722
1-17/64	1.2656	32.15	6	3-1/8	—	C68723
1-9/32	1.2812	32.54	6	3-1/8	—	C68724
1-19/64	1.2969	32.94	6	3-1/8	—	C68725
1-5/16	1.3125	33.34	6	3-1/8	C68670	C68726
1-21/64	1.3281	33.73	6	3-1/8	—	C68727
1-11/32	1.3438	34.13	6	3-1/8	—	C68728
1-23/64	1.3594	34.53	6	3-1/8	—	C68729
1-3/8	1.3750	34.93	6	3-1/8	C68671	C68730
1-25/64	1.3906	35.32	6	3-1/8	—	C68731
1-13/32	1.4062	35.72	6	3-1/8	—	C68732
1-27/64	1.4219	36.12	6	3-1/8	—	C68733
1-7/16	1.4375	36.51	6	3-1/8	C68672	C68734
1-29/64	1.4531	36.91	6	3-1/8	—	C68735
1-31/64	1.4844	37.70	6	3-1/8	—	C68736
1-1/2	1.5000	38.10	6	3-1/8	C68673	C68737

**SETS**

Drill Sizes	No. of Pieces	Case Style	Style 1680 Round Shank	Style 1681 Shank w/Flats
9/16"– 1" x 1/16"	8	metal	C69039	C69040



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**Double End**

**Double End**

**FEATURES**

- 135° split point on each end provides self-centering and faster, easier workpiece penetration
- HSS substrate with heavy duty geometry
- Black oxide finish for increased wear resistance and longer tool life
- Designed for use in sheet metal and other thin materials having a thickness similar to the drill diameter



Style 1683 Black Oxide

**INCH SIZES**

Drill Dia.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Style 1683 Black Oxide
1/8	.1250	3.18	1.929	.433	C69021
#30	.1285	3.26	1.875	.500	C69028
9/64	.1406	3.57	2.047	.551	C69022
5/32	.1562	3.97	2.165	.551	C69023
#20	.1610	4.09	2.063	.625	C69027
3/16	.1875	4.76	2.441	.669	C69024
#11	.1910	4.85	2.344	.688	C69026
1/4	.2500	6.35	2.756	.787	C69025

**METRIC SIZES**

Drill Dia.	Decimal Equiv.	Overall Length	Flute Length	Style 1683 Black Oxide
2.0	.0787	38	9	C69005
2.1	.0826	38	9	C69006
2.5	.0984	43	10	C69007
3.0	.1181	46	11	C69008
3.2	.1259	49	12	C69009
3.26	.1285	49	12	C69010
3.3	.1299	49	12	C69012
3.5	.1377	52	14	C69013
4.0	.1574	55	14	C69014
4.1	.1614	55	14	C69015
4.2	.1653	55	14	C69016
4.9	.1929	62	17.5	C69017
5.0	.1968	62	17.5	C69018
5.1	.2007	62	17.5	C69019
5.2	.2047	62	17.5	C69020

**Masonry / Drill Sets**

**Carbide-Tipped Masonry**



**FEATURES**

- Oversize carbide tip provides clearance for toggle bolts, anchor screws and expansion drills
- Regular helix for easy dust removal and more steel support for the tip.
- Shank reduced to fit 1/2" drill
- Conforms to ANSI Specification B212.15-1994



Style 0700 Bright Finish

**INCH SIZES**

Drill Dia.	Minimum Actual Dia.	Metric Equiv.	Overall Length	Useable Length	Shank Diameter	Style 0700 Bright
1/8	.1250	0.32	3	1 7/8	1/8	C48300
3/16	.1875	4.76	4	1 7/8	1/4	C48301
1/4	.2500	6.35	4	2 5/8	1/4	C48302
1/4	.2500	6.35	6	4 5/8	1/4	C48303
5/16	.3125	7.94	4	2 3/4	1/4	C48304
5/16	.3125	7.94	6	4 3/4	1/4	C48305
3/8	.3750	9.53	4	2 3/4	1/4	C48306
3/8	.3750	9.53	6	4 3/4	1/4	C48307
7/16	.4375	11.11	6	4 3/8	3/8	C48308
1/2	.5000	12.70	4	4 3/8	3/8	C48309
1/2	.5000	12.70	6	4 3/8	1/4	C48310
9/16	.5625	14.29	6	4 3/8	1/2	C48311
5/8	.6250	15.88	6	4 3/8	3/8	C48312
3/4	.7500	19.05	6	4 3/8	1/2	C48313
7/8	.8750	22.23	6	4 3/8	1/2	C48314
1	1.0000	25.40	6	4 3/8	1/2	C48315

**Drill Sets**

Size Range	No. of Pieces	Drill Style No.	Description	Case Style	EDP No.
<b>Jobber Length</b>					
1/16" - 1/4" x 1/64"	13	1600	Black, general purpose, 118° point	metal	C69034
		1604	Black & gold heavy duty, 135° split point	metal	C69030
		1607	Black & gold heavy duty, flats on shank	metal	C68343
1/16" - 1/2" x 1/32"	15	1600	Black, general purpose, 118° point	plastic	C69035
		1604	Black & gold heavy duty, 135° split point	plastic	C69031
		1607	Black & gold heavy duty, flats on shank	plastic	C68461
1/16" - 3/8" x 1/64"	21	1600	Black, general purpose, 118° point	metal	C69036
1/16" - 1/2" x 1/64"	29	1600	Black, general purpose, 118° point	plastic	C69037
		1604	Black & gold heavy duty, 135° split point	plastic	C69032
		1605	Black & gold HD, 3/8" shank, 135° split pt	plastic	C69033
		1607	Black & gold HD, flats on shank, 135° split pt	plastic	C69368
1mm - 13mm x 0.5mm	25	1600	Black, general purpose, 118° point	plastic	C69038
<b>Mechanics Length</b>					
1/16" - 1/4" x 1/64"	13	1620	Black & gold, gen purpose, 135° sp point	metal	C69029
1/16" - 1/2" x 1/64"	29	1620	Black & gold, gen purpose, 135° sp point	metal	C69041
				Bit Barrel™	C69384
<b>Reduced Shank</b>					
9/16" - 1" x 1/16"	8	1680	1/2" reduced round shank, black	metal	C69039
			1/2" reduced shank with flats, black	metal	C69040



25-piece set Style 1600 EDP No. C69038



# Hole Saws

## Bi-Metal Hole Saws

### FEATURES

- Bi-metal construction
- M-3 high speed steel cutting edge
- 4/6 variable tooth
- 3/16" thick heavy duty backing plate
- 1-1/8" cutting depth
- Sharper, longer lasting, shock-resistant teeth
- Faster cutting
- Smoother cuts
- Eliminates need for drive plate
- Resists tooth stripping
- Less vibration

- Heavy duty backing plate eliminates drive hole elongation
- Use for holes for pipe and tubing installations, door lock installations, electrical conduit, hoses and antennas
- Ideal for plumbing, construction, aircraft, electrical, maintenance and automotive applications
- Use in stainless steel, aluminum, brass, cast iron, plastic or wood



Style 1887 Hole Saw

### INCH and METRIC SIZES

Hole Saw Diameter			Pipe Tap		Pipe Entrance		Style 1887 EDP No.	Use with mandrel (listed on page 69)
Fractional	Decimal	Metric	Inch	Metric	Inch	Metric		
9/16	.5625	14					C17900	C17965 or C17967
5/8	.6250	16					C17901	C17965 or C17967
11/16	.6875	17					C17902	C17965 or C17967
3/4	.7500	19	1/2	13	3/8	10	C17903	C17965 or C17967
—	.8071	20					C17904	C17965 or C17967
13/16	.8125	21					C17905	C17965 or C17967
7/8	.8750	22	3/4	19	1/2	13	C17906	C17965 or C17967
15/16	.9375	24					C17907	C17965 or C17967
1	1.0000	25					C17908	C17965 or C17967
1-1/16	1.0625	27					C17909	C17965 or C17967
1-1/8	1.1250	29	1	25	3/4	19	C17910	C17965 or C17967
1-3/16	1.1875	30					C17911	C17970
1-1/4	1.2500	32					C17912	C17970
1-5/16	1.3125	33					C17913	C17970
1-3/8	1.3750	35			1	25	C17914	C17970
1-7/16	1.4375	37					C17915	C17970
1-1/2	1.5000	38	1-1/4	32			C17916	C17970
1-9/16	1.5625	40					C17917	C17970
1-5/8	1.6250	41					C17918	C17970
1-11/16	1.6875	43					C17919	C17970
1-3/4	1.7500	44	1-1/2	38	1-1/4	32	C17920	C17970
—	1.7716	45					C17921	C17970
1-13/16	1.8125	46					C17922	C17970
1-7/8	1.8750	48					C17923	C17970
—	1.9685	50					C17924	C17970
2	2.0000	51			1-1/2	38	C17925	C17970
2-1/16	2.0625	52					C17926	C17970
2-1/8	2.1250	54					C17927	C17970
—	2.1653	55					C17928	C17970
2-1/4	2.2500	57	2	51			C17929	C17970
2-5/16	2.3125	59					C17930	C17970
2-3/8	2.3750	60					C17931	C17970
2-1/2	2.5000	64			2	51	C17932	C17970
2-9/16	2.5625	65					C17933	C17970

continued on next page



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# Hole Saws

## Bi-Metal Hole Saws (continued)

### INCH and METRIC SIZES

Hole Saw Diameter			Pipe Tap		Pipe Entrance		Style 1887 EDP No.	Use with mandrel (listed on page 69)
Fractional	Decimal	Metric	Inch	Metric	Inch	Metric		
2-5/8	2.6250	67	2-1/2	64			C17934	C17970
—	2.6771	68					C17935	C17970
2-3/4	2.7500	70					C17936	C17970
2-7/8	2.8750	73					C17937	C17970
—	2.9527	75					C17938	C17970
3	3.0000	76			2-1/2	64	C17939	C17970
3-1/8	3.1250	79					C17940	C17970
3-1/4	3.2500	83	3	76			C17941	C17970
3-3/8	3.3750	86					C17942	C17970
3-1/2	3.5000	89					C17943	C17970
3-5/8	3.6250	92			3	76	C17944	C17970
3-3/4	3.7500	95	3-1/2	89			C17945	C17970
3-7/8	3.8750	98					C17946	C17970
—	3.9370	100					C17947	C17970
4	4.0000	102					C17948	C17970
4-1/8	4.1250	105			3-1/2	89	C17949	C17970
4-1/4	4.2500	108	4	102			C17950	C17970
4-3/8	4.3750	111					C17951	C17970
4-1/2	4.5000	114					C17952	C17970
4-3/4	4.7500	121	4-1/2	114	4	102	C17953	C17970
5	5.0000	127					C17954	C17970
5-1/2	5.5000	140			5	127	C17955	C17970
5-3/4	5.7500	146					C17956	C17970
6	6.0000	152					C17957	C17970

## Mandrels and Pilot Drills

### FEATURES

- Pilot drills and mandrels to complement your hole saws

### Mandrels

Description	For Hole Saw Sizes	Style 1884 EDP No.
1/4" Round Shank Mandrel	9/16" through 1/3/16"	C17965
3/8" Hex Shank Mandrel	9/16" through 1/3/16"	C17967
3/8" Hex Shank Quick Change Mandrel	1-1/4" and over	C17970

### Pilot Drills

Drill Diameter	Shank Diameter	Point Style	Overall Length	Flute Length	Flats	Style 1884 EDP No.
1/4	1/4	118° split	3-7/32	1-3/8	2	C17999



Style 1884 Mandrels



Style 1884 Pilot Drill



Customer Service: 800.348.2885



<b>Taps</b>	<b>Page</b>	<b>Dies (continued)</b>	<b>Page</b>
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**CLE-FORCE™ taps**

**Introducing Cle-Force taps...**a new line of high-quality, superior value maintenance taps. These taps are designed to deliver the performance you need for your maintenance and repair applications at a competitive price. They are made from top-grade materials under strict quality testing conditions. Try Cle-Force taps in your toughest jobs. You can rely on these tools to work for you every day.

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Style 1698 bottoming chamfer		Inch Style 1700 taper NPT	
Style 1699 set of one each			
Metric Style 1690M taper chamfer			
Style 1691M plug chamfer			
Style 1692M bottoming chamfer			
Style 1693M set of one of each			
Style 1696M taper chamfer			
Style 1697M plug chamfer			
Style 1698M bottoming chamfer			
Style 1699M set of one each			

**Inch and Metric Sizes**

Machine Screw and Fractional Sizes						Metric Sizes					
Nominal Tap Size	Drill Size	Decimal Equiv.	Nominal Tap Size	Drill Size	Decimal Equiv.	Nominal Tap Size	Drill Size	Decimal Equiv.	Nominal Tap Size	Drill Size	Decimal Equiv.
0-80	3/64	.0469	1/4-20	7	.2010	M1.6 x 0.35	1.25	.0492	M14 x 2.0	12.0	.4724
1-64	53	.0595	1/4-28	3	.2130	M1.8 x 0.35	1.45	.0571	M16 x 2.0	14.0	.5512
1-72	53	.0595	5/16-18	F	.2570	M2 x 0.4	1.6	.0630	M16 x 1.5	14.5	.5709
2-56	50	.0700	5/16-24	I	.2720	M2.2 x 0.45	1.75	.0689	M18 x 2.5	15.5	.6102
2-64	50	.0700	3/8-16	5/16	.3125	M2.5 x 0.45	2.05	.0807	M18 x 1.5	16.5	.6496
3-48	47	.0785	3/8-24	Q	.3320	M3 x 0.5	2.5	.0984	M20 x 2.5	17.5	.6890
3-56	46	.0810	7/16-14	U	.3680	M3.5 x 0.6	2.9	.1142	M20 x 1.5	18.5	.7283
4-40	43	.0890	7/16-20	25/64	.3906	M4 x 0.7	3.3	.1299	M22 x 2.5	19.5	.7677
4-48	42	.0935	1/2-13	27/64	.4219	M4.5 x 0.75	3.7	.1457	M22 x 1.5	20.5	.8071
5-40	38	.1015	1/2-20	29/64	.4531	M5 x 0.8	4.2	.1654	M24 x 3.0	21.0	.8268
5-44	37	.1040	9/16-12	31/64	.4844	M6 x 1.0	5.0	.1969	M24 x 2.0	22.0	.8661
6-32	36	.1065	9/16-18	33/64	.5156	M7 x 1.0	6.0	.2362	M27 x 3.0	24.0	.9449
6-40	33	.1130	5/8-11	17/32	.5312	M8 x 1.25	6.7	.2638	M27 x 2.0	25.0	.9843
8-32	29	.1360	5/8-18	37/64	.5781	M8 x 1.0	7.0	.2756	M30 x 3.5	26.5	1.0433
8-36	29	.1360	3/4-10	21/32	.6562	M10 x 1.5	8.5	.3346	M30 x 2.0	28.0	1.1024
10-24	26	.1470	3/4-16	11/16	.6875	M10 x 1.25	8.7	.3425	M33 x 3.5	29.5	1.1614
10-32	21	.1590	7/8-9	49/64	.7656	M12 x 1.75	10.2	.4016	M33 x 2.0	31.0	1.2205
12-24	16	.1770	7/8-14	13/16	.8125	M12 x 1.25	10.8	.4252	M36 x 4.0	32.0	1.2598
12-28	15	.1800	1-8	7/8	.8750				M36 x 3.0	33.0	1.2992
			1-12	59/64	.9219						

**Pipe Sizes**

Nominal Tap Size	NPT, NPTF w/o reamer w/reamer		NPSM	NPSC	NPSF
1/16-27	C (.242)	A (.234)	—	1/4	D (.246)
1/8-27	Q (.332)	21/64	T (.358)	11/32	R (.339)
1/4-18	7/16	27/64	15/32	7/16	7/16
3/8-18	9/16	9/16	(.603 special)	37/64	37/64
1/2-14	45/64	11/16	19mm	23/32	45/64
3/4-14	29/32	57/64	61/64	59/64	59/64
1-11 1/2	1-9/64	1-1/8	1-13/64	1-5/32	1-5/32
1-1/4-11-1/2	1-31/64	1-15/32	1-35/64	1-1/2	—
1-1/2-11-1/2	1-23/32	1-45/64	1-25/32	1-3/4	—
2-11-1/2	2-3/16	2-11/64	2-1/4	2-7/32	—





# Taps & Dies

## Maintenance Taps

### Hand Taps

#### FEATURES

- Ground thread for economical tapping
- HSS substrate
- Bright or straw finish
- Taper chamfer generally used for hand operations
- Plug chamfer for general purpose applications
- Bottoming chamfer used to thread close to an obstruction or blind hole



Style 0401 inch/Style 0401M metric Taper Chamfer



Style 0402 inch/Style 0402M metric Plug Chamfer



Styles 0403 inch/Styles 0403M metric Bottoming Chamfer

Style 0404 inch and Style 0404M metric set of one of each

#### INCH SIZES

Size	Tap TPI	Series	Decimal Equiv.	No. of Flutes	Overall Length	Thread Length	Style 0401 Taper	Style 0402 Plug	Style 0403 Bottoming	Style 0404 Set of 1 each
4	40	UNC	.1120	3	1-7/8	9/16	C62001	C62002	C62003	C62004
5	40	UNC	.1250	3	1-15/16	5/8	C62005	C62006	C62007	C62008
6	32	UNC	.1380	3	2	11/16	C62009	C62010	C62011	C62012
8	32	UNC	.1640	4	2-1/8	3/4	C62013	C62014	C62015	C62016
10	24	UNC	.1900	4	2-3/8	7/8	C62017	C62018	C62019	C62020
10	32	UNF	.1900	4	2-3/8	7/8	C62021	C62022	C62023	C62024
12	24	UNC	.2160	4	2-3/8	15/16	C62025	C62026	C62027	C62028
1/4	20	UNC	.2500	4	2-1/2	1	C62029	C62030	C62031	C62032
1/4	28	UNF	.2500	4	2-1/2	1	C62033	C62034	C62035	C62036
5/16	18	UNC	.3125	4	2-23/32	1-1/8	C62037	C62038	C62039	C62040
5/16	24	UNF	.3125	4	2-23/32	1-1/8	C62041	C62042	C62043	C62044
3/8	16	UNC	.3750	4	2-15/16	1-1/4	C62045	C62046	C62047	C62048
3/8	24	UNF	.3750	4	2-15/16	1-1/4	C62049	C62050	C62051	C62052
7/16	14	UNC	.4375	4	3-5/32	1-7/16	C62053	C62054	C62055	C62056
7/16	20	UNF	.4375	4	3-5/32	1-7/16	C62057	C62058	C62059	C62060
1/2	13	UNC	.5000	4	3-3/8	1-21/32	C62061	C62062	C62063	C62064
1/2	20	UNF	.5000	4	3-3/8	1-21/32	C62065	C62066	C62067	C62068
9/16	12	UNC	.5625	4	3-19/32	1-21/32	C62069	C62070	C62071	C62072
9/16	18	UNF	.5625	4	3-19/32	1-21/32	C62073	C62074	C62075	C62076
5/8	11	UNC	.6250	4	3-13/16	1-13/16	C62077	C62078	C62079	C62080
5/8	18	UNF	.6250	4	3-13/16	1-13/16	C62081	C62082	C62083	C62084
3/4	10	UNC	.7500	4	4-1/4	2	C62085	C62086	C62087	C62088
3/4	16	UNF	.7500	4	4-1/4	2	C62089	C62090	C62091	C62092
7/8	9	UNC	.8750	4	4-11/16	2-7/32	C62093	C62094	C62095	C62096
7/8	14	UNF	.8750	4	4-11/16	2-7/32	C62097	C62098	C62099	C62100
1	8	UNC	1.0000	4	5-1/8	2-1/2	C62101	C62102	C62103	C62104
1	12	UNF	1.0000	4	5-1/8	2-1/2	C62105	C62106	C62107	C62108
1	14	UNS	1.0000	4	5-1/8	2-1/2	C62109	C62110	C62111	C62112

#### METRIC SIZES

Tap Size and TPI	Decimal Equiv.	No. of Flutes	Overall Length	Thread Length	Style 0401M Taper	Style 0402M Plug	Style 0403M Bottoming	Style 0404M Set of 1 each
M3 x 0.5	.1181	3	1-15/16	5/8	C63201	C63202	C63203	C63204
M4 x 0.7	.1575	4	2-1/8	3/4	C63209	C63210	C63211	C63212
M5 x 0.8	.1969	4	2-3/8	7/8	C63217	C63218	C63219	C63220
M6 x 1	.2362	4	2-1/2	1	C63221	C63222	C63223	C63224
M7 x 1	.2756	4	2-23/32	1-1/8	C63225	C63226	C63227	C63228
M8 x 1.25	.3150	4	2-23/32	1-1/8	C63229	C63230	C63231	C63232
M10 x 1.5	.3937	4	2-15/16	1-1/4	C63233	C63234	C63235	C63236
M12 x 1.75	.4724	4	3-3/8	1-21/32	C63237	C63238	C63239	C63240
M14 x 2	.5512	4	3-37/64	1-23/32	C63241	C63242	C63243	C63244
M16 x 2	.6299	4	3-51/64	1-13/16	C63245	C63246	C63247	C63248
M18 x 2.5	.7087	4	4-1/64	1-13/16	C63249	C63250	C63251	C63252
M20 x 2.5	.7874	4	4-15/32	2	C63253	C63254	C63255	C63256



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# Taps & Dies

## Maintenance Taps

### Spiral Point Taps

#### FEATURES

- Ground thread for economical tapping
- HSS substrate
- Bright or straw finish
- Spiral point pushes chips forward for through hole applications
- Plug chamfer for general purpose applications



Style 0411 inch/Style 0411M metric Plug Chamfer

#### INCH SIZES

Size	Tap TPI	Series	Decimal Equiv.	No. of Flutes	Overall Length	Thread Length	Style 0411 Plug
4	40	UNC	.1120	2	1-7/8	9/16	C62151
5	40	UNC	.1250	2	1-15/16	5/8	C62152
6	32	UNC	.1380	2	2	11/16	C62153
8	32	UNC	.1640	2	2-1/8	3/4	C62154
10	24	UNC	.1900	2	2-3/8	7/8	C62155
10	32	UNF	.1900	2	2-3/8	7/8	C62156
12	24	UNC	.2160	2	2-3/8	15/16	C62157
1/4	20	UNC	.2500	2	2-1/2	1	C62158
1/4	28	UNF	.2500	2	2-1/2	1	C62159
5/16	18	UNC	.3125	2	2-23/32	1-1/8	C62160
5/16	24	UNF	.3125	2	2-23/32	1-1/8	C62161
3/8	16	UNC	.3750	3	2-15/16	1-1/4	C62162
3/8	24	UNF	.3750	3	2-15/16	1-1/4	C62163
1/2	13	UNC	.5000	3	3-3/8	1-21/32	C62164

#### METRIC SIZES

Tap Size and TPI	Decimal Equiv.	No. of Flutes	Overall Length	Thread Length	Style 0411M Plug
M2 x 0.4	.0787	2	1-3/4	7/16	C62172
M3 x 0.5	.1181	2	1-15/16	5/8	C62175
M4 x 0.7	.1575	2	2-1/8	3/4	C62177
M5 x 0.8	.1969	2	2-3/8	7/8	C62179
M6 x 1	.2362	2	2-1/2	1	C62180
M8 x 1.25	.3150	2	2-23/32	1-1/8	C62183
M10 x 1.5	.3937	3	2-15/16	1-1/4	C62185
M12 x 1.75	.4724	3	3-3/8	1-21/32	C62187
M16 x 2	.6299	3	3-51/64	1-13/16	C62191



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# Taps & Dies

## Maintenance Taps

### Taper Pipe Taps

#### FEATURES

- Ground thread for economical tapping
- HSS substrate
- NPT thread design
- Bright finish
- 3-1/2 thread chamfer
- Style 0462 features regular NPT thread design
- Style 0464 features interrupted thread for better lubrication and chip clearance



Style 0462 Regular NPT Thread



Style 0464 Interrupted NPT Thread

#### INCH SIZES

Tap Size	Tap TPI	Tap Series	Decimal Equiv.	Shank Diameter	Overall Length	Thread Length	Style 0462		Style 0464	
							Flutes	Regular Thread	Flutes	Interrupted Thread
1/8	27	NPT	.1250	.3125	2-1/8	3/4	4	C64213	5	C64223
1/8*	27	NPT	.1250	.4375	2-1/8	3/4	4	C64214	5	C64224
1/4	18	NPT	.2500	.5626	2-7/16	1-1/16	4	C64215	5	C64225
3/8	18	NPT	.3750	.7000	2-9/16	1-1/16	4	C64216	5	C64226
1/2	14	NPT	.5000	.6875	3-1/8	1-3/8	4	C64217	5	C64227
3/4	14	NPT	.7500	.9063	3-1/4	1-3/8	5	C64218	5	C64228
1	11-1/2	NPT	1.0000	1.1250	3-3/4	1-3/8	5	C64219	5	C64229
1-1/4	11-1/2	NPT	1.2500	1.3125	4	1-3/4	5	C64220	5	C64230
1-1/2	11-1/2	NPT	1.5000	1.5000	4-1/4	1-3/4	7	C64221	-	-
2	11-1/2	NPT	2.0000	1.8750	4-1/2	1-3/4	7	C64222	-	-

\*large shank

### Straight Pipe Taps

#### FEATURES

- Ground thread for economical tapping
- HSS substrate
- NPS thread design, suitable for NPSC or NPSM
- Bright finish
- 3-1/2 thread chamfer



Style 0463 NPS Thread

#### INCH SIZES

Tap Size	Tap TPI	Tap Series	Decimal Equiv.	No. of Flutes	Shank Diameter	Overall Length	Thread Length	Style 0463 Bright
1/8	27	NPSC	.1250	4	.4375	2-1/8	3/4	C64231
1/4	18	NPSC	.2500	4	.5626	2-7/16	1-1/16	C64232
3/8	18	NPSC	.3750	4	.7000	2-9/16	1-1/16	C64233
1/2	14	NPSC	.5000	4	.6875	3-1/8	1-3/8	C64234
3/4	14	NPSC	.7500	5	.9063	3-1/4	1-3/8	C64235
1	11-1/2	NPSC	1.0000	5	1.1250	3-3/4	1-3/8	C64236

# Taps & Dies

## Other Tools

### Combination Tap and Drill

#### FEATURES

- Ground thread for economical tapping
- HSS substrate
- Bright finish
- Drill and tap in one operation without changing tools
- Two flutes run length of the tool
- Drill length dictates thickness of material to be worked



Style 0450 Tap/Drill

#### INCH SIZES

Tap Size	Tap TPI	Thread Series	Decimal Equiv.	No. of Flutes	Overall Length	Thread Length	Drill Length	Drill Size	Style 0450 Bright
6	32	UNF	.1380	2	2	11/16	5/16	.1095	C64937
8	32	UNC	.1640	2	2-1/8	3/4	3/8	.1360	C64960
10	32	UNF	.1900	2	2-3/8	7/8	13/32	.1610	C64961
1/4	20	UNC	.2500	2	2-1/2	15/16	17/32	.2010	C64949
5/16	18	UNC	.3125	2	3	1-1/8	11/16	.2570	C64952
3/8	16	UNC	.3750	2	3-1/2	1-1/4	13/16	.3125	C64955

### USCTI Table 325 – Thread Limits

Nominal Size and TPI	Major Diameter			Pitch Diameter			Nominal Size and TPI	Major Diameter			Pitch Diameter		
	Basic	Min	Max	Basic	Min	Max		Basic	Min	Max	Basic	Min	Max
1/16 64 NS	.0625	.0635	.0650	.0524	.0526	.0536	7/8 9 NC	.8750	.8820	.8860	.8028	.8038	.8068
1/8 40 NS	.1250	.1266	.1286	.1088	.1090	.1105	7/8 14 NF	.8750	.8799	.8839	.8286	.8296	.8321
5/32 32 NS	.1563	.1585	.1605	.1360	.1365	.1380	7/8 18 NS	.8750	.8790	.8830	.8389	.8399	.8424
8/16 24 NS	.1875	.1903	.1923	.1604	.1609	.1624	1 8 NC	1.0000	1.0078	1.0118	.9188	.9198	.9228
3/16 32 NS	.1875	.1897	.1917	.1672	.1677	.1692	1 12 NF	1.0000	1.0055	1.0095	.9459	.9469	.9494
1/4 20 NC	.2500	.2532	.2557	.2175	.2180	.2200	1 14 NS	1.0000	1.0049	1.0089	.9536	.9546	.9571
1/4 28 NF	.2500	.2524	.2549	.2268	.2273	.2288	1-1/8 7 NC	1.1250	1.1337	1.1382	1.0322	1.0332	1.0367
5/16 18 NC	.3125	.3160	.3185	.2764	.2769	.2789	1-1/8 12 NF	1.1250	1.1305	1.1350	1.0709	1.0719	1.0749
5/16 24 NF	.3125	.3153	.3178	.2854	.2859	.2874	1-1/4 7 NC	1.2500	1.2587	1.2632	1.1572	1.1582	1.1617
3/8 16 NC	.3750	.3789	.3814	.3344	.3349	.3369	1-1/4 12 NC	1.2500	1.2555	1.2600	1.1959	1.1969	1.1999
3/8 24 NF	.3750	.3778	.3803	.3479	.3484	.3499	1-3/8 6 NC	1.3750	1.3850	1.3895	1.2667	1.2677	1.2712
7/16 14 NC	.4375	.4419	.4449	.3911	.3916	.3941	1-3/8 12 NF	1.3750	1.3805	1.3850	1.3209	1.3219	1.3249
7/16 20 NF	.4375	.4407	.4437	.4050	.4055	.4075	1-1/2 6 NC	1.5000	1.5100	1.5145	1.3917	1.3927	1.3962
1/2 13 NC	.5000	.5047	.5077	.4500	.4505	.4530	1-1/2 12 NF	1.5000	1.5055	1.5100	1.4459	1.4469	1.4499
1/2 20 NF	.5000	.5032	.5062	.4675	.4680	.4700	1-5/8 6 NS	1.6250	1.6355	1.6410	1.5167	1.5182	1.5222
9/16 12 NC	.5625	.5675	.5705	.5084	.5089	.5114	1-3/4 5 NC	1.7500	1.7602	1.7657	1.6201	1.6216	1.6256
9/16 18 NF	.5625	.5660	.5690	.5264	.5269	.5289	1-7/8 5 NS	1.8750	1.8852	1.8907	1.7451	1.7466	1.7506
5/8 11 NC	.6250	.6304	.6334	.5660	.5665	.5690	2 4-1/2 NC	2.0000	2.0111	2.0166	1.8557	1.8572	1.8612
5/8 18 NF	.6250	.6285	.6315	.5889	.5894	.5914	2-1/4 4-1/2 NC	2.2500	2.2611	2.2671	2.1057	2.1072	2.1117
3/4 10 NC	.7500	.7559	.7599	.6850	.6855	.6885	2-1/2 4 NC	2.5000	2.5128	2.5188	2.3376	2.3396	2.3441
3/4 16 NF	.7500	.7539	.7579	.7094	.7099	.7124							



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# Taps & Dies

## Hexagon Dies

### Carbon Steel and High-Speed Steel Hexagon Rethreading Dies

#### FEATURES

- Carbon steel or high-speed steel
- Used in repair work for dressing over substrate
- Bright finish
- Can be used only in free machining materials
- Used in repair work for dressing over bruised and rusty threads



Style 0650 or Style 492 Hex Die

#### INCH SIZES — Carbon Steel and High-Speed Steel

Die Diameter TPI and Series	Decimal Equiv.	Length Across Flats	Thickness	Style 0650 Carbon Steel	Style 492 High-Speed Steel
1/4 20 UNC	.2500	19/32	1/4	C65601	C77600
1/4 28 UNF	.2500	19/32	1/4	C65602	C77602
5/16 18 UNC	.3125	11/16	5/16	C65603	C77604
5/16 24 UNF	.3125	11/16	5/16	C65605	C77606
3/8 16 UNC	.3750	25/32	3/8	C65606	C77608
3/8 24 UNF	.3750	25/32	3/8	C65607	C77610
7/16 14 UNC	.4375	7/8	7/16	C65608	C77612
7/16 20 UNF	.4375	7/8	7/16	C65609	C77614
1/2 13 UNC	.5000	1-1/16	1/2	C65610	C77616
1/2 20 UNF	.5000	1-1/16	1/2	C65611	C77618
9/16 12 UNC	.5625	1-1/16	1/2	C65612	C77620
9/16 18 UNF	.5625	1-1/16	1/2	C65613	C77622
5/8 11 UNC	.6250	1-1/4	5/8	C65614	C77624
5/8 18 UNF	.6250	1-1/4	5/8	C65615	C77626
11/16 11 NS	.6875	1-7/16	3/4	C65616	—
11/16 16 NS	.6875	1-7/16	3/4	C65617	—
3/4 10 UNC	.7500	1-7/16	3/4	C65618	C77628
3/4 16 UNF	.7500	1-7/16	3/4	C65619	C77630
7/8 9 UNC	.8750	1-5/8	7/8	C65620	C77632
7/8 14 UNF	.8750	1-5/8	7/8	C65621	C77634
1 8 UNC	1.0000	1-13/16	1	C65622	C77636
1 12 UNF	1.0000	1-13/16	1	C65623	C77638
1 14 NS	1.0000	1-13/16	1	C65624	C77640
1-1/8 7 UNC	1.1250	2	1	C65625	C77642
1-1/8 12 UNF	1.1250	2	1	C65627	C77644
1-1/4 7 UNC	1.2500	2-3/16	1	C65628	C77646
1-1/4 12 UNF	1.2500	2-3/16	1	C65629	—
1-3/8 6 UNC	1.4100	2-3/8	1	C65630	C77648
1-3/8 12 UNF	1.4100	2-3/8	1	C65631	—
1-1/2 6 UNC	1.5000	2-9/16	1	C65632	C77650
1-1/2 12 UNF	1.5000	2-9/16	1	C65633	—

#### TAPER PIPE SIZES — Carbon Steel

Die Diameter TPI and Series	Decimal Equiv.	Length Across Flats	Thickness	Style 0660 Carbon Steel
1/8 27 NPT	.1250	1-1/16	3/8	C65571
1/4 18 NPT	.2500	1-1/4	5/8	C65572
3/8 18 NPT	.3750	1-7/16	5/8	C65573
1/2 14 NPT	.5000	1-5/8	3/4	C65574
3/4 14 NPT	.7500	2	13/16	C65575
1 11-1/2 NPT	1.0000	2-3/8	1	C65576

metric sizes on next page



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# Taps & Dies

## Hexagon Dies

### Carbon Steel and High-Speed Steel Hexagon Rethreading Dies (continued)

#### METRIC SIZES — Carbon Steel

Die Diameter TPI and Series	Decimal Equiv.	Length Across Flats	Thickness	Style 0650M Carbon Steel
M5 x 0.8	.1969	19/32	1/4	C65580
M6 x 1	.2362	19/32	1/4	C65581
M8 x 1.25	.3150	11/16	5/16	C65582
M10 x 1.5	.3937	7/8	7/16	C65583
M12 x 1.75	.4724	1-1/16	1/2	C65584
M14 x 2	.5512	1-1/16	1/2	C65585
M16 x 2	.6299	1-1/4	5/8	C65586
M20 x 2.5	.7874	1-5/8	7/8	C65587

### Carbon Steel Hexagon Rethreading Die Sets

#### FEATURES

- NC or NF sets
- 1 each of die sizes listed
- Plastic case

#### INCH SIZES

Set Number	Number of Sizes	Die Sizes	EDP Number
42NC	8	1/4-20 NC 5/16-18 NC 3/8-16 NC 7/16-14 NC	C67275
42NF	8	1/4-28 NF 5/16-24 NF 3/8-24 NF 7/16-20 NF	C67276
44NC	10	1/4-20 NC 5/16-18 NC 3/8-16 NC 7/16-14 NC 1/2-13 NC	C67278
45NCNF	20	1/4-20 NC 5/16-18 NC 3/8-16 NC 7/16-14 NC 1/2-13 NC 1-8 NC	C67282
NC/NF	10	1/4-20NC 5/16-18NC 3/8-16NC 7/16-14NC 1/2-13NC	C67284
		1/2-28NF 5/16-24NF 3/8-24NF 7/16-20NF 1-14 NF	

#### METRIC SIZES

Set Number	Number of Sizes	Die Sizes	EDP Number
49Metric	7	M6 x 1 M8 x 1.25 M10 x 1.5 M12 x 1.75 M14 x 2 M16 x 2 M20 x 2.5	C67283



Set C67278



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# Round Adjustable Dies

## Round Adjustable Dies — Carbon Steel and High-Speed Steel

### FEATURES

- Carbon steel and high-speed steel substrate
- Short chamfer on both sides of die to extend tool life
- Adjustable for wear and size
- Cut external threads when held in a die stock
- Produce UN thread form
- Can be used for close to shoulder work



Style 0610/Style 0710 Round Adjustable Die

### INCH SIZES — Carbon Steel and High-Speed Steel

						Style 0610				Style 0610		Style 0710	
Die Diameter	Decimal	Outside	Carbon Steel	HSS		Die Diameter	Decimal	Outside	Carbon Steel	HSS	Die Diameter	Decimal	Outside
TPI and Series	Equiv.	Dia.	EDP No.	EDP No.	Thickness	TPI and Series	Equiv.	Dia.	EDP No.	EDP No.	TPI and Series	Equiv.	Dia.
0 80 UNF	.0600	13/16	1/4	C65022	—	3/8 16 UNC	.3750	1	3/8	C65159	C65816		
1 64 UNC	.0730	13/16	1/4	C65026	—	3/8 16 UNC	.3750	1 1/2	1/2	C65208	C65855		
1 72 UNF	.0730	13/16	1/4	C65027	—	3/8 16 UNC	.3750	2	5/8	C65280	—		
2 56 UNC	.0860	13/16	1/4	C65036	—	3/8 24 UNF	.3750	1	3/8	C65160	C65817		
2 64 UNF	.0860	13/16	1/4	C65037	—	3/8 24 UNF	.3750	1 1/2	1/2	C65209	C65856		
3 48 UNC	.0990	13/16	1/4	C65045	—	3/8 24 UNF	.3750	2	5/8	C65281	—		
3 56 UNF	.0990	13/16	1/4	C65046	—	7/16 14 UNC	.4375	1	3/8	C65171	C65828		
4 40 UNC	.1120	13/16	1/4	C65048	—	7/16 14 UNC	.4375	1 1/2	1/2	C65220	C65865		
4 48 UNF	.1120	13/16	1/4	C65049	—	7/16 14 UNC	.4375	2	5/8	C65292	—		
5 40 UNC	.1250	13/16	1/4	C65057	C65729	7/16 20 UNF	.4375	1	3/8	C65172	C65829		
5 44 UNF	.1250	13/16	1/4	C65058	C65730	7/16 20 UNF	.4375	1 1/2	1/2	C65221	C65866		
6 32 UNC	.1380	13/16	1/4	C65061	C65733	7/16 20 UNF	.4375	2	5/8	C65293	—		
6 32 UNC	.1380	1	3/8	C65114	C65785	1/2 13 UNC	.5000	1	3/8	C65470	—		
6 40 UNF	.1380	13/16	1/4	C65062	C65734	1/2 13 UNC	.5000	1 1/2	1/2	C65232	C65875		
8 32 UNC	.1640	13/16	1/4	C65069	C65739	1/2 13 UNC	.5000	2	5/8	C65303	—		
8 32 UNC	.1640	1	3/8	C65119	C65789	1/2 20 UNF	.5000	1	3/8	C65471	—		
8 36 UNF	.1640	13/16	1/4	C65070	C65740	1/2 20 UNF	.5000	1 1/2	1/2	C65233	C65876		
10 24 UNC	.1900	13/16	1/4	C65075	C65743	1/2 20 UNF	.5000	2	5/8	C65304	—		
10 24 UNC	.1900	1	3/8	C65124	C65792	9/16 12 UNC	.5625	1 1/2	1/2	C65239	C65881		
10 32 UNF	.1900	13/16	1/4	C65076	C65744	9/16 12 UNC	.5625	2	5/8	C65311	—		
10 32 UNF	.1900	1	3/8	C65125	C65793	9/16 18 UNF	.5625	1 1/2	1/2	C65240	C65882		
12 24 UNC	.2160	13/16	1/4	C65083	C65751	9/16 18 UNF	.5625	2	5/8	C65312	—		
12 24 UNC	.2160	1	3/8	C65132	C65798	5/8 11 UNC	.6250	1 1/2	1/2	C65243	C65884		
12 28 UNF	.2160	13/16	1/4	C65084	C65752	5/8 11 UNC	.6250	2	5/8	C65315	C65946		
1/4 20 UNC	.2500	13/16	1/4	C65093	C65760	5/8 11 UNC	.6250	2 1/2	3/4	C65374	—		
1/4 20 UNC	.2500	1	3/8	C65140	C65804	5/8 18 UNF	.6250	1 1/2	1/2	C65244	C65885		
1/4 20 UNC	.2500	1 1/2	1/2	C65192	C65839	5/8 18 UNF	.6250	2	5/8	C65316	C65947		
1/4 20 UNC	.2500	2	5/8	C65264	—	3/4 10 UNC	.7500	1 1/2	1/2	C65250	—		
1/4 28 UNF	.2500	13/16	1/4	—	C65761	3/4 10 UNC	.7500	2	5/8	C65328	C65957		
1/4 28 UNF	.2500	1	3/8	C65142	C65805	3/4 10 UNC	.7500	2 1/2	3/4	C65384	—		
1/4 28 UNF	.2500	1 1/2	1/2	C65193	C65840	3/4 16 UNF	.7500	1 1/2	1/2	C65251	—		
1/4 28 UNF	.2500	2	5/8	C65265	—	3/4 16 UNF	.7500	2	5/8	C65329	C65958		
5/16 18 UNC	.3125	13/16	1/4	—	C65766	3/4 16 UNF	.7500	2 1/2	3/4	C65385	—		
5/16 18 UNC	.3125	1	3/8	C65147	C65808	7/8 9 UNC	.8750	2	5/8	C65339	C65966		
5/16 18 UNC	.3125	1 1/2	1/2	C65197	C65844	7/8 9 UNC	.8750	2 1/2	3/4	C65395	—		
5/16 18 UNC	.3125	2	5/8	C65269	—	7/8 14 UNF	.8750	2	5/8	C65340	C65967		
5/16 24 UNF	.3125	13/16	1/4	—	C65767	7/8 14 UNF	.8750	2 1/2	3/4	C65396	—		
5/16 24 UNF	.3125	1	3/8	C65148	C65809								
5/16 24 UNF	.3125	1 1/2	1/2	C65198	C65845								
5/16 24 UNF	.3125	2	5/8	C65270	—								

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# Round Adjustable Dies

## Round Adjustable Dies — Carbon Steel and High-Speed Steel (continued)

### INCH SIZES — Carbon Steel and High-Speed Steel

						Style 0610		Style 0710							
Die Diameter	Decimal	Outside	Carbon Steel	HSS		Die Diameter	Decimal	Outside	Carbon Steel	HSS	Die Diameter	Decimal	Outside	Carbon Steel	HSS
TPI and Series	Equiv.	Dia.	EDP No.	EDP No.	Thickness	TPI and Series	Equiv.	Dia.	EDP No.	EDP No.	TPI and Series	Equiv.	Dia.	EDP No.	EDP No.
1 8 UNC	1.0000	2	5/8	C65349	—	1-1/8 7 UNC	1.1250	3	1	C65426	—				
1 8 UNC	1.0000	2 1/2	3/4	C65405	—	1-1/8 12 UNF	1.1250	3	1	C65427	—				
1 8 UNC	1.0000	3	1	C65416	—	1-1/4 7 UNC	1.2500	3	1	C65433	—				
1 12 UNF	1.0000	2	5/8	C65350	—	1-1/4 12 UNF	1.2500	3	1	C65434	—				
1 12 UNF	1.0000	2 1/2	3/4	C65406	—	1-3/8 6 UNC	1.3750	3	1	C65441	—				
1 12 UNF	1.0000	3	1	C65417	—	1-3/8 12 UNF	1.3750	3	1	C65442	—				
1 14 UNF	1.0000	2	5/8	C65407	—	1-1/2 6 UNC	1.5000	3	1	C65449	—				
						1-1/2 12 UNF	1.5000	3	1	C65450	—				

### TAPER PIPE SIZES — Carbon Steel

						Style 0620	
Die Diameter	Decimal	Outside	Carbon Steel			Die Diameter	Decimal
TPI and Series	Equiv.	Dia.	EDP No.	Thickness		and TPI	Equiv.
1/8 27 NPT	.1250	1	3/8	C65491		M2.5 x 0.45	.0984
1/8 27 NPT	.1250	1 1/2	1/2	C65492		M3 x 0.5	.1181
1/4 18 NPT	.2500	1 1/2	1/2	C65493		M3.5 x 0.6	.1378
1/4 18 NPT	.2500	2	5/8	C65495		M4 x 0.7	.1575
3/8 18 NPT	.3750	1 1/2	1/2	C65494		M4.5 x 0.75	.1772
3/8 18 NPT	.3750	2	5/8	C65496		M5 x 0.8	.1969
1/2 14 NPT	.5000	2	5/8	C65497		M6 x 1	.2362

### METRIC SIZES — High-Speed Steel

						Style 0710M	
Die Diameter	Decimal	Outside	HSS			Die Diameter	Decimal
and TPI	Equiv.	Dia.	EDP No.	Thickness		and TPI	Equiv.
M2.5 x 0.45	.0984	13/16	1/4	C65721		M6 x 1	.2362
M3 x 0.5	.1181	13/16	1/4	C65724		M6 x 1	.2362
M3.5 x 0.6	.1378	13/16	1/4	C65732		M7 x 1	.2756
M4 x 0.7	.1575	13/16	1/4	C65737		M8 x 1.25	.3150
M4.5 x 0.75	.1772	13/16	1/4	C65742		M10 x 1.5	.3937
M5 x 0.8	.1969	13/16	1/4	C65747		M12 x 1.75	.4724
M6 x 1	.2362	13/16	1/4	C65757		M14 x 2	.5512
M6 x 1	.2362	1	3/8	C65801		M16 x 2	.6300
M7 x 1	.2756	1	3/8	C65807		M18 x 2.5	.7087
M8 x 1.25	.3150	1	3/8	C65813		M20 x 2.5	.7874
M10 x 1.5	.3937	1	3/8	C65824			
M12 x 1.75	.4724	1	3/8	C65833			
M14 x 2	.5512	1 1/2	1/2	C65880			
M16 x 2	.6300	1 1/2	1/2	C65889			
M18 x 2.5	.7087	1 1/2	1/2	C65896			
M20 x 2.5	.7874	1 1/2	1/2	C65901			

### Die Stocks for Round Adjustable Dies

### FEATURES

- Style 222 holds round adjustable dies with three adjusting screws
- Style 224 stocks have built-in workpiece guide and lock in place with two set screws

Product Number	Die O.D.	Overall Length	Style 222 EDP No.
2	13/16	6-1/4	C67223
3	1	9	C67224
5	1-1/2	13-7/8	C67226
6	2	23	C67227
7	2-1/2	29	C67228
8	3	40	C67229

Product Number	Die O.D.	Overall Length	Style 224 EDP No.
13	13/16	6-1/4	C67235
14	1	13	C67236
15	1-1/2	18	C67237
16	2	26	C67238



Style 222 Die Stock



Style 224 Die Stock



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DRILLS

HOLE SAWS

TAPS & DIES

BURS

INDEX



# Tap and Round Adjustable Die Sets

## Tap & Die Sets

### FEATURES

- Combination UNC/UNF sizes
- Tap wrench and die stock included
- 1 each of tap and die sizes listed
- Metal case

### Tap & Die Sets with HSS Maintenance Hand Taps and Carbon Steel Round Adjustable Die



Set C67271

### Inch and Metric Sizes

Set Number	Number of Sizes	Tap and Die Sizes		EDP Number
26S	8	2-56 UNC	8-32 UNC	C67271
		3-48 UNC	10-24 UNC	
		4-40 UNC	10-32 UNF	
		6-32 UNC	12-24 UNC	
517	7	4-40 UNC	10-24 UNC	C00517
		6-32 UNC	10-32 UNF	
		8-32 UNC	12-24 UNC	
			1/4-20 UNC	
518	5	1/4-20 UNC	3/8-16 UNC	C00518
		5/16-18 UNC	7/16-14 UNC	
			1/2-13 UNC	
525	8	0-80 UNF	4-40 UNC	C00525
		1-72 UNF	6-32 UNC	
		2-56 UNC	8-32 UNC	
		3-48 UNC	10-24 UNC	
526	10	4-40 UNC	4-48 UNF	C00526
		6-32 UNC	6-40 UNF	
		8-32 UNC	8-36 UNF	
		10-24 UNC	10-32 UNF	
		12-24 UNC	12-28 UNF	
528	11	1/4-20 UNC	1/4-28 UNF	C00528
		5/16-18 UNC	5/16-24 UNF	
		3/8-16 UNC	3/8-24 UNF	
		7/16-14 UNC	7/16-20 UNF	
		1/2-13 UNC	1/2-20 UNF	
		pipe size 1/8-27 (short shank)		
532	21	1/4-20 UNC	1/4-28 UNF	C00532
		5/16-18 UNC	5/16-24 UNF	
		3/8-16 UNC	3/8-24 UNF	
		7/16-14 UNC	7/16-20 UNF	
		1/2-13 UNC	1/2-20 UNF	
		9/16-12 UNC	9/16-18 UNF	
		5/8-11 UNC	5/8-18 UNF	
		3/4-10 UNC	3/4-16 UNF	
		7/8-9 UNC	7/8-14 UNF	
		1-8 UNC	1-14 UNS	
		pipe size 1/8-27 (long shank)		

Set Number	Number of Sizes	Tap and Die Sizes		EDP Number
815	20	1/4-20 UNC	1/4-28 UNF	C67293
		5/16-18 UNC	5/16-24 UNF	
		3/8-16 UNC	3/8-24 UNF	
		7/16-14 UNC	7/16-20 UNF	
		1/2-13 UNC	1/2-20 UNF	
		9/16-12 UNC	9/16-18 UNF	
		5/8-11 UNC	5/8-18 UNF	
		3/4-10 UNC	3/4-16 UNF	
		7/8-9 UNC	7/8-14 UNF	
		1-8 UNC	1-12 UNF	
533	28 Taps 15 Dies	4-40 UNC	1/4-20 UNC	C00533
		6-32 UNC	1/4-28 UNF	
		8-32 UNC	5/16-18 UNC	
		10-24 UNC	5/16-24 UNF	
		10-32 UNF	3/8-16 UNC	
		12-24 UNC	3/8-24 UNF	
			7/16-14 UNC	
			7/16-20 UNF	
			1/2-13 UNC	
			1/2-20 UNF	
			9/16-12 UNC	
			9/16-18 UNF	
			5/8-18 UNC	
			3/4-16 UNC	
			7/8-14 UNC	
			1-14 UNS	
		pipe sizes 1/8-27 (long shank)		
			1/4-18	
			3/8-18	
			1/2-14	
		metric sizes	M14 x 1.5	
			M18 x 1.5	

# Tap and Round Adjustable Die Sets

## Tap & Die Sets

### Tap & Die Sets with Maintenance Hand Taps and HSS Round Adjustable Dies (metric sizes)

### Metric Sizes

Set Number	Number of Sizes	Tap and Die Sizes		EDP Number
448	7	M2.5 x 0.45	M4 x 0.7	C00448
		M3 x 0.5	M4.5 x 0.75	
		M3.5 x 0.6	M5 x 0.8	
			M6 x 1.0	
449	5	M6 x 1.0	M8 x 1.25	C00449
		M7 x 1.0	M10 x 1.5	
			M12 x 1.75	



Set C00449

## Tap, Die, and Drill Sets

### FEATURES

- 1 each of tap, die, and drill sizes listed
- Tap wrench, die stock, and screwdriver included
- Metal case

### HSS Tap, HSS Round Adjustable Die and HSS Black Jobber Drill Sets

### Metric Sizes

Set Number	Number of Sizes	Tap and Die Sizes	Drill Size	EDP Number
451	5	M6 x 1.0	5.0mm	C00451
		M7 x 1.0	6.0mm	
		M8 x 1.25	6.7mm	
		M10 x 1.5	8.5mm	
		M12 x 1.75	10.2mm	



Set C00451



**Quick-Set Two-Piece Die System**

**FEATURES**

- Quick-Set Two-Piece Die System consists of these parts  
Series 0550 — Die  
Series 0551 — Cap  
Series 0552 — Guide  
Series 0553 — Collet
- Inch sizes are sold as a complete assembly (see table on this page), or in their component parts.
- Metric sizes are sold in their component parts only.
- Use with Quick-Set die stocks; see page 85.
- Collets for use with Quick-Set dies consist of a cap and a guide; order cap and guide separately, or assembled as a collet (page 84).
- Die halves are seated in the beveled cap slot and held in place by the guide, which screws into the underside of the cap.
- Die is adjusted by the set screws at either end of the slot.
- Caps of a given outside diameter are made with several different sizes of slots to take different sizes of dies as

indicated in the table below.

- Separate guide is required for each cutting size.
- To order separate guides, specify cutting size of the die and the size of the collet for 1/4" and 1/2" dies.

**Application Information:**

- Use in most maintenance applications.
- Ideal for hand threading operations.

**Quick-Set Collet Assembly Complete with Two-Piece Die**

- **Manufactured from carbon steel**
- Complete range of cutting sizes
- Most cutting sizes may be ordered by size only; however, sizes 1/4" and 1/2" can be furnished in two different

blanks, which should be ordered by size and collet number.

- Unified and American National thread form standard.



Style 0554 Die Assembly

**INCH SIZES**

Style 0554				
Die Diameter TPI and Series	Decimal Equiv.	Collet No.	Collet O.D.	Assembly EDP No.
4 40 UNC	.1120	A1	1-1/4	C66782
6 32 UNC	.1380	A1	1-1/4	C66783
8 32 UNC	.1640	A1	1-1/4	C66784
10 24 UNC	.1900	A1	1-1/4	C66785
10 32 UNF	.1900	A1	1-1/4	C66786
12 24 UNC	.2160	A1	1-1/4	C66787
1/4 20 UNC	.2500	A1	1-1/4	C66788
1/4 20 UNC	.2500	1	2	C66789
1/4 28 UNF	.2500	1	2	C66790
5/16 18 UNC	.3125	1	2	C66791
5/16 24 UNF	.3125	1	2	C66792
3/8 16 UNC	.3750	1	2	C66793
3/8 24 UNF	.3750	1	2	C66794
7/16 14 UNC	.4375	1	2	C66795
7/16 20 UNF	.4375	1	2	C66796

Style 0554				
Die Diameter TPI and Series	Decimal Equiv.	Collet No.	Collet O.D.	Assembly EDP No.
1/2 13 UNC	.5000	1	2	C66797
1/2 20 UNF	.5000	1	2	C66798
1/2 13 UNC	.5000	5	2-3/4	C66801
1/2 20 UNF	.5000	5	2-3/4	C66802
9/16 12 UNC	.5625	5	2-3/4	C66803
9/16 18 UNF	.5625	5	2-3/4	C66804
5/8 11 UNC	.6250	5	2-3/4	C66805
5/8 18 UNF	.6250	5	2-3/4	C66806
3/4 10 UNC	.7500	5	2-3/4	C66807
3/4 16 UNF	.7500	5	2-3/4	C66808
7/8 9 UNC	.8750	5	2-3/4	C66809
7/8 14 UNF	.8750	5	2-3/4	C66810
1 8 UNC	1.0000	5	2-3/4	C66811
1 12 UNF	1.0000	5	2-3/4	C66812
1 14 UNS	1.0000	5	2-3/4	C66813

**Quick-Set Two-Piece Die System**

**Quick-Set Two-Piece Die Only**

**FEATURES**

- Two-piece construction with two cutting edges in each piece.
- Manufactured from carbon steel
- Easy to sharpen.

- One side has a 2 to 3 thread chamfer for threading; the other side has a 1 to 1-1/2 thread chamfer for threading close to a shoulder.
- Unified and American National thread form standard.



Style 0550 Die

- Enables a wide range of adjustments.
- Collet and die blank numbers are referenced in the table below.

**INCH SIZES**

Style 0550					USES	USES
Die Diameter TPI and Series	Decimal Equiv.	Die EDP No.	Collet No.	Die Blank No.	Collet	Die Blank
4 40 UNC	.1120	C66693	A1	A1		
6 32 UNC	.1380	C66694	A1	A1		
8 32 UNC	.1640	C66695	A1	A1		
10 24 UNC	.1900	C66696	A1	A1		
10 32 UNF	.1900	C66697	A1	A1		
12 24 UNC	.2160	C66698	A1	A1		
1/4 20 UNC	.2500	C66699	A1	A1		
1/4 20 UNC	.2500	C66701	1,5	A		
1/4 28 UNF	.2500	C66700	A1	A1		
1/4 28 UNF	.2500	C66702	1,5	A		
5/16 18 UNC	.3125	C66703	1,5	A		
5/16 24 UNF	.3125	C66704	1,5	A		
3/8 16 UNC	.3750	C66705	1,5	B		
3/8 24 UNF	.3750	C66706	1,5	B		
7/16 14 UNC	.4375	C66707	1,5	B		
7/16 20 UNF	.4375	C66708	1,5	B		

**METRIC SIZES**

Style 0550					USES	USES
Die Diameter TPI and Series	Decimal Equiv.	Die EDP No.	Collet No.	Die Blank No.	Collet	Die Blank
M6 x 1	.2362	C66670	5	A		
M8 x 1.25	.3150	C66671	5	A		
M10 x 1.5	.3937	C66672	5	B		
M12 x 1.75	.4724	C66673	5	B		
M14 x 2	.5512	C66674	5	C		
M16 x 2	.6300	C66675	5	C		
M18 x 2.5	.7087	C66676	5	C		
M20 x 2.5	.7874	C66677	5	C		
M22 x 2.5	.8661	C66678	5	D		
M24 x 3	.9449	C66679	5	D		

Style 0550					USES	USES
Die Diameter TPI and Series	Decimal Equiv.	Die EDP No.	Collet No.	Die Blank No.	Collet	Die Blank
1/2 13 UNC	.5000	C66709	1	B		
1/2 13 UNC	.5000	C66710	5	C		
1/2 20 UNF	.5000	C66711	1	B		
1/2 20 UNF	.5000	C66712	5	C		
9/16 12 UNC	.5625	C66713	5	C		
9/16 18 UNF	.5625	C66714	5	C		
5/8 11 UNC	.6250	C66715	5	C		
5/8 18 UNF	.6250	C66716	5	C		
3/4 10 UNC	.7500	C66717	5	C		
3/4 16 UNF	.7500	C66718	5	C		
7/8 9 UNC	.8750	C66719	5	D		
7/8 14 UNF	.8750	C66720	5	D		
1 8 UNC	1.0000	C66721	5	D		
1 12 UNF	1.0000	C66722	5	D		
1 14 UNS	1.0000	C66723	5	D		

**Quick-Set Two-Piece Die System**

**Quick-Set Two-Piece Die System Components**

- The table below shows the Item number for the cap, Style 0551, the guide, Style 0552, and the collet, Style 0553.
- The collet consists of the assembled cap and guide

**INCH SIZES**

Nominal Size	Collet No.	Die Blank Size	Cap O.D.	Style 0551	Style 0552	Style 0553
				Cap EDP No.	Guide EDP No.	Collet EDP No.
4	A1	A1	1-1/4	C66727	C66681	C66754
6	A1	A1	1-1/4	C66727	C66682	C66755
8	A1	A1	1-1/4	C66727	C66683	C66756
10	A1	A1	1-1/4	C66727	C66684	C66757
12	A1	A1	1-1/4	C66727	C66685	C66758
1/4	A1	A1	1-1/4	C66727	C66686	C66759
1/4	5	A	2	C66728	C66737	C66775
5/16	5	A	2	C66728	C66738	C66776
3/8	5	B	2	C66729	C66739	C66777
7/16	5	B	2	C66729	C66740	C66778
1/2	1	B	2	C66729	C66741	C66764
1/2	5	C	2-3/4	C66732	C66746	C66769
9/16	5	C	2-3/4	C66732	C66747	C66770
5/8	5	C	2-3/4	C66732	C66748	C66771
3/4	5	C	2-3/4	C66732	C66749	C66772
7/8	5	D	2-3/4	C66733	C66750	C66773
1	5	D	2-3/4	C66733	C66751	C66774

**METRIC SIZES**

Nominal Size	Collet No.	Die Blank Size	Cap O.D.	Style 0551	Style 0552	Style 0553
				Cap EDP No.	Guide EDP No.	Collet EDP No.
M6	5	A	2-3/4	—	C66820	—
M8	5	A	2-3/4	—	C66821	—
M10	5	B	2-3/4	—	C66822	—
M12	5	B	2-3/4	—	C66823	—
M14	5	C	2-3/4	C66732	C66824	—
M16	5	C	2-3/4	C66732	C66825	—
M18	5	C	2-3/4	C66732	C66826	—
M20	5	C	2-3/4	C66732	C66827	—
M22	5	D	2-3/4	C66733	C66828	—
M24	5	D	2-3/4	C66733	C66829	—



Style 0551 Cap



Style 0552 Guide



Style 0553 Collet  
(combined Cap and Guide)

**Quick-Set Two-Piece Die System**

**Quick-Set Die Stock — Style 223 Regular**

**Features**

- Carbon steel construction.
- Use with all Series 0554 Quick-Set collets with two-piece dies.

**Application Information:**

- Quick-Set die stocks have center holes corresponding to the outside diameter of the Quick-Set collets.

Stock No.	Collet No.	Collet Capacity	Length of Stock	Style 223
				Stock EDP No.
#A1	A1	1-1/4	7-1/2	C67216
#1	1	2	14-1/2	C67214
#5	5	2-3/4	23	C67217
#5A	5	2-3/4	26	C67215
#5B	5	2-3/4	29	C67218



Style 223 Regular Quick-Set Die Stock

**Quick-Set Jr. Die Stock — Style 225**

**Features**

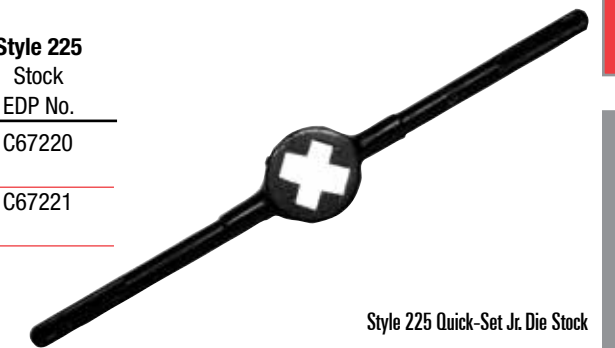
- Carbon steel construction.
- Use with all Series 0550 Quick-Set two-piece dies without collet.

**Application Information:**

- Quick-Set Jr. die stocks are designed to use Quick-Set dies without collets.
- Double slots enable use of two

- different size blanks in the same stock.
- Dies fit directly into the stock and are held in place by a screw guide.

Stock No.	Cutting Size	Die Blank Size	Guide No.	Cutting Size Range	Length of Stock	Style 225
						Stock EDP No.
#1	1/4 to 5/16 3/8 to 1/2	A B	1	1/4 to 1/2	14-1/2	C67220
#5	9/16 to 3/4 7/8 to 1	C D	5	9/16 TO 1	26	C67221



Style 225 Quick-Set Jr. Die Stock

**Quick-Set Spanner Wrench — Style 226**

- Because all guides are so small they are round not square, so you cannot use a standard wrench.
- Fits into two holes to turn guide.

Stock No.	Collet No.	Collet Capacity	Style 226
			Stock EDP No.
#A1	A1	1-1/4	C67232

# Taps & Dies

## Two-Piece Dies

### Quick-Set Two-Piece Die System Sets

#### Quick-Set Tap & Die Sets

##### Features

- Carbon steel Quick-Set two-piece dies and collets.
- Maintenance hand taps.
- Tap wrench, die stock

Set No.	No. of Cutting Sizes	Threading Sizes	Collet No.	Tap Wrench No.	Die Stock No.	Style 055 EDP No.
559	7	4-40 NC 6-32 NC 8-32 NC 10-24 NC 12-24 NC 14-20 NC	A1	T9, A1	A1	C00609
5510	5	1/4-20 NC 5/16-18 NC 3/8-16 NC	1	#5	#1	C00610
5511	10	1/4-20 NC 5/16-18 NC 3/8-16 NC 7/16-14 NC 1/2-13 NC	5	#5, #7	5A	C00611
5512	10	1/4-20 NC 5/16-18 NC 3/8-16 NC 7/16-14 NC 1/2-13 NC	1	#5	#1	C00612
5513	20	1/4-20 NC 5/16-18 NC 3/8-16 NC 7/16-14 NC 1/2-13 NC 9/16-12 NC 5/8-11 NC 3/4-10 NC 7/8-9 NC 1-8 NC	1,5	#5, #7	#1, #5B	C00613
5514	7	M6 x 1 M8 x 1.25 M10 x 1.5 M12 x 1.75 M14 x 2	5	#6	#5	C00614

#### Quick-Set Jr. Tap & Die Set

##### Features

- Carbon steel Quick-Set two-piece dies and guides.
- HSS Maintenance hand taps.
- Tap wrenches
- Die stock to hold dies without collet

Set No.	No. of Cutting Sizes	Threading Sizes	Tap Wrench No.	Die Stock No.	Style 055 EDP No.
558	20	1/4-20 NC 5/16-18 NC 3/8-16 NC 7/16-14 NC 1/2-13 NC 9/16-12 NC 5/8-11 NC 3/4-10 NC 7/8-9 NC 1-8 NC	#5, #7	#1, #5	C00608



C00609 Tap and Die Set

# Taps & Dies

## Tap Wrenches

### Tap Wrenches

#### Style 240 Standard Straight Tap Wrench

- Used for hand tapping

Product Number	Mach Screw	Tap Size Ranges		Pipe	Overall Length	Style 240 EDP No.
		Fractional	Metric			
0	0 to 14	1/16 to 1/4	M1.5 to M6.3	—	7	C67201
14	0 to 14	1/16 to 3/8	M1.5 to M10	—	9	C67197
5	8 to 14	5/32 to 1/2	M4 to M12.5	1/8	11	C67202
6	8 to 14	5/32 to 3/4	M4 to M19	1/8 to 1/4	15	C67203
7	—	1/4 to 1-1/8	M12 to M28	1/8 to 3/4	19	C67204
8	—	3/4 to 1-5/8	M19 to M40	3/8 to 1-1/4	40	C67205
22	—	1 to 2-1/2	M25 to M56	3/4 to 2	54	C67200



Style 240 Tap Wrench

#### Style 242 Plain T-Handle Tap Wrench

- Used for hand tapping in out-in-the-open jobs

Product Number	Mach Screw	Tap Size Ranges		Overall Length	Style 242 EDP No.
		Fractional	Metric		
T9	0 to 14	1/16 to 1/4	M1.5 to M6.3	2-3/4	C67206
T10	12 to 14	7/32 to 1/2	M5.5 to M12.5	3-5/8	C67207



Style 242 Tap Wrench

#### Style 243 Slip T-Handle Tap Wrench

- Used for hand tapping or in difficult spaces requiring a slip handle

Product Number	Mach Screw	Tap Size Ranges		Overall Length	Style 243 EDP No.
		Fractional	Metric		
T11	0 to 14	1/16 to 1/4	M1.5 to M6.3	2-3/4	C67208
T12	12 to 14	7/32 to 1/2	M5.5 to M12.5	3-5/8	C67209



Style 243 Tap Wrench

#### Style 244 Combination Ratchet and Slip Handle Tap Wrench

- Used for hand tapping in difficult spaces needing ratchet drive

Product Number	Mach Screw	Tap Size Ranges		Overall Length	Style 244 EDP No.
		Fractional	Metric		
T13	0 to 14	1/16 to 1/4	M1.5 to M6.3	3-3/4	C67210
T14	12 to 14	7/32 to 1/2	M5.5 to M12.5	5	C67211



Style 244 Tap Wrench

#### Style 245 Long Shank T-Handle Tap Wrench

- Used for hand tapping where extra reach is required

Product Number	Mach Screw	Tap Size Ranges		Overall Length	Style 245 EDP No.
		Fractional	Metric		
T16	0 to 14	1/16 to 1/4	M1.5 to M6.3	8-3/4	C67212
T17	12 to 14	7/32 to 1/2	M5.5 to M12.5	10-5/8	C67213



Style 245 Tap Wrench



Customer Service: 800.348.2885



Customer Service: 800.348.2885





**General Purpose Taps**

**Taper Pipe Taps**

**FEATURES**

- Ground thread for economical tapping
- HSS substrate or carbon
- NPT thread design
- Bright finish
- 3-1/2 thread chamfer
- Style 1686 features regular NPT thread design
- Style 1688 features interrupted thread for better lubrication and chip clearance
- Style 1700 features regular NPT thread design



Style 1686 Regular NPT Thread, HSS



Style 1688 Interrupted NPT Thread, HSS



Style 1700 Regular NPT Thread, Carbon

**INCH SIZES**

Tap Size	Tap TPI	Tap Series	Decimal Equiv.	Shank Diameter	Overall Length	Thread Length	Flutes	Style 1686 Regular Thread	Style 1700 Regular Thread	Style 1688 Flutes	Style 1688 Interrupted Thread
1/8	27	NPT	.1250	.3125	2-1/8	3/4	4	C69315	C69507	5	C69325
1/8*	27	NPT	.1250	.4375	2-1/8	3/4	4	C69316	—	5	C69326
1/4	18	NPT	.2500	.5626	2-7/16	1-1/16	4	C69317	C69508	5	C69327
3/8	18	NPT	.3750	.7000	2-9/16	1-1/16	4	C69318	C69509	5	C69328
1/2	14	NPT	.5000	.6875	3-1/8	1-3/8	4	C69319	C69510	5	C69329
3/4	14	NPT	.7500	.9063	3-1/4	1-3/8	5	C69320	C69511	5	C69330
1	11-1/2	NPT	1.0000	1.1250	3-3/4	1-3/8	5	C69321	C69512	5	C69331
1-1/4	11-1/2	NPT	1.2500	1.3125	4	1-3/4	5	C69322	—	5	C69332
1-1/2	11-1/2	NPT	1.5000	1.5000	4-1/4	1-3/4	7	C69323	—	7	—
2	11-1/2	NPT	2.0000	1.8750	4-1/2	1-3/4	7	C69324	—	7	—

\*Large Shank

**Straight Pipe Taps  
NPS (NPSC, NPSM)**

**FEATURES**

- Ground thread for economical tapping
- HSS substrate
- Suitable for use in NPSC and NPSM work
- Bright finish
- 3-1/2 thread chamfer



Style 1687 NPS Thread

**INCH SIZES**

Tap Size	Tap TPI	Tap Series	Decimal Equiv.	No. of Flutes	Shank Diameter	Overall Length	Thread Length	Style 1687 Bright
1/8	27	NPSC	.1250	4	.4375	2-1/8	3/4	C69333
1/4	18	NPSC	.2500	4	.5626	2-7/16	1-1/16	C69334
3/8	18	NPSC	.3750	4	.7000	2-9/16	1-1/16	C69335
1/2	14	NPSC	.5000	4	.6875	3-1/8	1-3/8	C69336
3/4	14	NPSC	.7500	5	.9063	3-1/4	1-3/8	C69337
1	11-1/2	NPSC	1.0000	5	1.1250	3-3/4	1-3/8	C69338

**Solid Carbide Burs**

Style	Description	Page
1845	CLE-SA Cylindrical	92
1846	CLE-SB Cylindrical with End Cut	92-93
1847	CLE-SC Cylindrical Ball Nose	93
1848	CLE-SF Round Nose Tree	94
1849	CLE-SG Pointed Tree	94-95
1850	CLE-SM Pointed Cone	95
1851	CLE-SE Egg Shaped	96
1852	CLE-SL Included Angle	96
1853	CLE-SD Ball Shaped	97
1854	CLE-SH Flame Shaped	97
1856	CLE-SJ 60° Included Angle (Countersink)	98
1857	CLE-SK 90° Included Angle (Countersink)	98
1858	CLE-SN Inverted Taper	98
1855	— Bur Sets	98

**FEATURES**

- Wide selection of shapes and sizes
- Constructed from solid carbide
- Bright finish
- Right-hand spiral cut and double cut available
- Solid carbide shanks (Styles A and D) and brazed steel shanks (Styles B and C) available

**BUR CUTTING SPEEDS**

Bur Diameter	Recommended RPM	Maximum RPM
1/16	60,000-90,000	100,000
1/8	40,000-70,000	90,000
3/16	35,000-60,000	80,000
1/4	30,000-50,000	70,000
5/16	20,000-40,000	68,000
3/8	20,000-40,000	66,000
7/16	15,000-40,000	58,000
1/2	15,000-40,000	50,000
5/8	12,000-25,000	40,000
3/4	10,000-20,000	33,000
1	7,500-20,000	25,000

**STANDARD CUT STYLES**



**RH Spiral Cut** — Cle-Line's right-hand spiral cut produces a smooth finish for general-purpose use on steel, cast iron, and other ferrous and non-ferrous materials.



**Double Cut** — The double cut style has right- and left-hand helical flutes combined to produce a chisel-type cutting tooth. This feature results in faster penetration and stock removal with minimal bounce or chatter. This results in higher productivity with less operator fatigue and a good finish on a variety of workpiece materials.

**STANDARD SHANK STYLES**

**Shank A** — 1/8" (3mm) solid carbide



**Shank B** — 1/8" (3mm) hardened steel



**Shank C** — 1/4" (6mm) hardened steel



**Shank D** — 1/4" (6mm) solid carbide



CLE-SA Cylindrical without End Cut



INCH SIZES

USCTI Number	Cutting Diameter			Shank Diameter	Length of Cut	Overall Length	Shank Type	Style 1845	
	Fractional	Decimal	Metric					RH Spiral Cut	Double Cut
SA-42	3/32	.0938	2.38	1/8	7/16	1-1/2	A	C17601	C17550
SA-43	1/8	.1250	3.18	1/8	9/16	1-1/2	A	C17602	C17551
SA-14	3/16	.1875	4.76	1/4	5/8	2	C	C17608	—
SA-51	1/4	.2500	6.35	1/4	5/8	2	A	C17606	C17605
SA-1	1/4	.2500	6.35	1/4	5/8	2	D	C17609	C17552
SA-2	5/16	.3125	7.94	1/4	3/4	2-1/2	C	C17610	C17553
SA-3	3/8	.3750	9.53	1/4	3/4	2-1/2	C	C17611	C17554
SA-4	7/16	.4375	11.11	1/4	1	2-3/4	C	C17612	—
SA-5	1/2	.5000	12.70	1/4	1	2-3/4	C	C17613	C17555
SA-6	5/8	.6250	15.88	1/4	1	2-3/4	C	—	C17556
SA-7	3/4	.7500	19.05	1/4	1	2-3/4	C	—	C17615
SA-9	1	1.000	25.40	1/4	1	2-3/4	C	C17616	C17557

METRIC SIZES

USCTI Number	Cutting Diameter			Shank Diameter	Length of Cut	Overall Length	Shank Type	Style 1845	
	MM	Dec Inch	Metric					RH Spiral Cut	Double Cut
SA-43	3	.1181	2.38	3	14.3	38.1	A	—	C17591
SA-1	6	.2362	3.18	6	15.9	50.8	D	—	C17588
SA-2	7.94	.3125	4.76	6	19.1	63.5	C	—	C17589
SA-3	9.53	.3750	6.35	6	19.1	63.5	C	—	C17590
SA-5	12.7	.5000	9.53	6	25.4	69.9	C	—	C17592

CLE-SB Cylindrical with End Cut



INCH SIZES

USCTI Number	Cutting Diameter			Shank Diameter	Length of Cut	Overall Length	Shank Type	Style 1846	
	Fractional	Decimal	Metric					RH Spiral Cut	Double Cut
SB-43	1/8	.1250	3.18	1/8	9/16	1-1/2	A	C17622	—
SB-11	1/8	.1250	3.18	1/4	1/2	2	C	C17625	—
SB-14	3/16	.1875	4.76	1/4	5/8	2	C	C17626	—
SB-51	1/4	.2500	6.35	1/8	3/16	1-7/16	B	C17624	—
SB-1	1/4	.2500	6.35	1/4	5/8	2	D	C17627	C17546
SB-3	3/8	.3750	9.53	1/4	3/4	2-1/2	C	C17629	C17547
SB-5	1/2	.5000	12.70	1/4	1	2-3/4	C	C17631	C17548
SB-6	5/8	.6250	15.88	1/4	1	2-3/4	C	—	C17549

Explanation of shank styles shown on page 91.

metric sizes on next page



Customer Service: 800.348.2885

CLE-SB Cylindrical with End Cut (continued)

METRIC SIZES

USCTI Number	Cutting Diameter			Shank Diameter	Length of Cut	Overall Length	Shank Type	Style 1846	
	MM	Dec Inch	Metric					RH Spiral Cut	Double Cut
SB-43	3	.1181	2.38	3	14.30	38.1	A	C17632	C17510
SB-1	6	.2362	3.18	6	15.90	50.8	D	—	C17507
SB-2	7.94	.3125	4.76	6	19.10	63.5	C	—	C17508
SB-3	9.53	.3750	6.35	6	19.10	63.5	C	—	C17509
SB-5	12.7	.5000	9.53	6	25.40	69.9	C	—	C17511
SB-6	15.88	.6250	15.88	6	25.40	69.9	C	C17633	C17512

CLE-SC Cylindrical Ball Nose



INCH SIZES

USCTI Number	Cutting Diameter			Shank Diameter	Length of Cut	Overall Length	Shank Type	Style 1847	
	Fractional	Decimal	Metric					RH Spiral Cut	Double Cut
SC-41	3/32	.0938	2.38	1/8	7/16	1-1/2	A	C17635	—
SC-42	1/8	.1250	3.18	1/8	9/16	1-1/2	A	C17636	C17540
SC-11	1/8	.1250	3.18	1/4	1/2	2	C	—	C17539
SC14	3/16	.1875	4.76	1/4	5/8	2	C	C17641	—
SC-1	1/4	.2500	6.35	1/4	5/8	2	D	C17642	C17541
SC-2	5/16	.3125	7.94	1/4	3/4	2-1/2	C	—	C17542
SC-3	3/8	.3750	9.53	1/4	3/4	2-1/2	C	C17644	C17543
SC-5	1/2	.5000	12.70	1/4	1	2-3/4	C	C17646	C17544
SC-6	5/8	.6250	15.88	1/4	1	2-3/4	C	—	C17545

METRIC SIZES

USCTI Number	Cutting Diameter			Shank Diameter	Length of Cut	Overall Length	Shank Type	Style 1847	
	MM	Dec Inch	Metric					RH Spiral Cut	Double Cut
SC-43	3	.1181	2.38	3	14.3	38.1	A	C17634	C17517
SC-52	3.97	.1562	3.18	3	12.7	38.1	A	—	C17520
SC-53	4.76	.1875	4.76	3	12.7	38.1	A	—	C17521
SC-1	6	.2362	3.18	6	15.9	50.8	D	—	C17513
SC-51	6.35	.2500	6.35	3	12.7	44.5	B	—	C17519
SC-2	7.94	.3125	7.94	6	19.1	63.5	C	—	C17514
SC-3	9.53	.3750	9.53	6	19.1	63.5	C	—	C17515
SC-5	12.7	.5000	12.70	6	25.4	69.9	C	—	C17518
SC-6	15.88	.6250	15.88	6	25.4	69.9	C	—	C17522
SC-7	19.05	.7500	19.05	6	25.4	69.9	C	—	C17523

Explanation of shank styles shown on page 91.



Customer Service: 800.348.2885



CLE-SF Round Nose Tree



Style 1848 RH Spiral Cut



Style 1848 Double Cut

INCH SIZES

USCTI Number	Cutting Diameter			Shank Diameter	Length of Cut	Overall Length	Shank Type	Style 1848	
	Fractional	Decimal	Metric					RH Spiral Cut	Double Cut
SF-41	1/8	.1250	3.18	1/8	1/4	1-1/2	A	C17650	—
SF-42	1/8	.1250	3.18	1/8	1/2	1-1/2	A	C17651	—
SF-1	1/4	.2500	6.35	1/4	5/8	2	D	C17654	C17580
SF-3	3/8	.3750	9.53	1/4	3/4	2-1/2	C	C17655	C17581
SF-13	1/2	.5000	12.70	1/4	3/4	2-1/2	C	C17657	—
SF-5	1/2	.5000	12.70	1/4	1	2-3/4	C	C17658	C17582
SF-6	5/8	.6250	15.88	1/4	1	2-3/4	C	—	C17583
SF-7	3/4	.7500	19.05	1/4	1	2-3/4	C	—	C17584
SF-14	3/4	.7500	19.05	1/4	1-1/4	3	C	C17661	—
SF-15	3/4	.7500	19.05	1/4	1-1/2	3-1/4	C	C17662	—

METRIC SIZES

USCTI Number	Cutting Diameter			Shank Diameter	Length of Cut	Overall Length	Shank Type	Style 1848	
	MM	Dec Inch	Metric					RH Spiral Cut	Double Cut
SF-42	3	.1181	3.18	3	12.7	38.1	A	C17663	C17526
SF-53	4.76	.1875	4.76	3	12.7	38.1	A	—	C17528
SF-1	6	.2362	6.35	6	15.9	50.8	D	—	C17524
SF-51	6.35	.2500	6.35	3	12.7	44.5	B	C17596	C17597
SF-3	9.53	.3750	9.53	6	19.1	63.5	C	—	C17525
SF-5	12.7	.5000	12.70	6	25.4	69.9	C	—	C17527

CLE-SG Pointed Tree



Style 1849 RH Spiral Cut



Style 1849 Double Cut

INCH SIZES

USCTI Number	Cutting Diameter			Shank Diameter	Length of Cut	Overall Length	Shank Type	Style 1849	
	Fractional	Decimal	Metric					RH Spiral Cut	Double Cut
SG-41	1/8	.1250	3.18	1/8	1/4	1-1/2	A	C17675	—
SG-42	1/8	.1250	3.18	1/8	5/16	1-1/2	A	C17676	—
SG-53	3/16	.1875	4.76	1/8	1/2	1-1/2	A	C17679	—
SG-51	1/4	.2500	6.35	1/8	1/2	1-3/4	B	C17680	—
SG-1	1/4	.2500	6.35	1/4	5/8	2	D	C17681	C17575
SG-3	3/8	.3750	9.53	1/4	3/4	2-1/2	C	C17683	C17576
SG-13	1/2	.5000	12.70	1/4	3/4	2-1/2	C	—	C17577
SG-5	1/2	.5000	12.70	1/4	1	2-3/4	C	C17685	C17578
SG-6	5/8	.6250	15.88	1/4	1	2-3/4	C	—	C17579

Explanation of shank styles shown on page 91.

metric sizes on next page



Customer Service: 800.348.2885

CLE-SG Pointed Tree (continued)

METRIC SIZES

USCTI Number	Cutting Diameter			Shank Diameter	Length of Cut	Overall Length	Shank Type	Style 1849	
	MM	Dec Inch	Metric					RH Spiral Cut	Double Cut
SG-44	3	.1181	3.18	3	12.7	38.1	A	C17674	C17486
SG-53	4.76	.1875	4.76	3	12.7	38.1	A	—	C17488
SG-1	6	.2362	6.35	6	15.9	50.8	D	—	C17483
SG-2	7.94	.3125	7.94	6	19.1	63.5	C	—	C17484
SG-3	9.53	.3750	9.53	6	19.1	63.5	C	—	C17485
SG-5	12.7	.5000	12.70	6	25.4	69.9	C	—	C17487

CLE-SM Pointed Cone



Style 1850 RH Spiral Cut



Style 1850 Double Cut

INCH SIZES

USCTI Number	Cutting Diameter			Shank Diameter	Length of Cut	Overall Length	Included Angle	Shank Type	Style 1850	
	Fractional	Decimal	Metric						RH Spiral Cut	Double Cut
SM-42	1/8	.1250	3.18	1/8	7/16	1-1/2	14°	A	C17690	C17568
SM-51	1/4	.2500	6.35	1/8	1/2	1-7/8	22°	B	C17693	—
SM-1	1/4	.2500	6.35	1/4	1/2	2	22°	D	C17694	C17569
SM-2	1/4	.2500	6.35	1/4	3/4	2	14°	D	C17695	C17570
SM-3	1/4	.2500	6.35	1/4	1	2	10°	D	C17696	C17571
SM-4	3/8	.3750	9.53	1/4	5/8	2-1/2	28°	C	—	C17572
SM-5	1/2	.5000	12.70	1/4	7/8	2-3/4	28°	C	C17698	C17573
SM-6	5/8	.6250	15.88	1/4	1	2-7/8	31°	C	C17699	C17574

METRIC SIZES

USCTI Number	Cutting Diameter			Shank Diameter	Length of Cut	Overall Length	Included Angle	Shank Type	Style 1850	
	MM	Dec Inch	Metric						RH Spiral Cut	Double Cut
SM-42	3	.1181	3.18	3	11.1	38.1	14°	A	C17672	C17498
SM-53	4.76	.1875	4.76	3	12.7	38.1	16°	A	C17664	—
SM-2	6	.2362	6.35	6	19.1	50.8	14°	D	—	C17496
SM-4	9.53	.3750	9.53	6	15.9	63.5	28°	C	—	C17497
SM-5	12.7	.5000	12.70	6	22.2	69.9	28°	C	C17673	C17499
SM-6	15.88	.6250	15.88	6	25.4	66.7	31°	C	—	C17502

Explanation of shank styles shown on page 91.



Customer Service: 800.348.2885



CLE-SE Egg Shaped



INCH SIZES

USCTI Number	Cutting Diameter			Shank Diameter	Length of Cut	Overall Length	Shank Type	Style 1851	
	Fractional	Decimal	Metric					RH Spiral Cut	Double Cut
SE-41	1/8	.1250	3.18	1/8	7/32	1-1/2	A	C17700	—
SE-51	1/4	.2500	6.35	1/8	3/8	1-5/8	B	C17702	—
SE-1	1/4	.2500	6.35	1/4	3/8	2	D	C17703	C17558
SE-3	3/8	.3750	9.53	1/4	5/8	2-3/8	C	C17704	C17559
SE-5	1/2	.5000	12.70	1/4	7/8	2-5/8	C	C17705	C17560
SE-6	5/8	.6250	15.88	1/4	1	2-3/4	C	C17706	—
SE-7	3/4	.7500	19.05	1/4	1	2-3/4	C	—	C17561

METRIC SIZES

USCTI Number	Cutting Diameter		Shank Diameter	Length of Cut	Overall Length	Shank Type	Style 1851	
	MM	Dec Inch					RH Spiral Cut	Double Cut
SE-41	3.0	.1181	3	5.6	38.1	A	C17708	—
SE-53	4.76	.1875	3	7.1	38.1	A	—	C17489

CLE-SL Included Angle



INCH SIZES

USCTI Number	Cutting Diameter			Shank Diameter	Length of Cut	Overall Length	Included Angle	Shank Type	Style 1852	
	Fractional	Decimal	Metric						RH Spiral Cut	Double Cut
SL-42	1/8	.1250	3.18	1/8	1/2	1-1/2	8°	A	C17711	—
SL-1	1/4	.2500	6.35	1/4	5/8	2	14°	D	C17713	C17564
SL-2	5/16	.3125	7.94	1/4	7/8	2-3/4	14°	C	C17714	C17565
SL-3	3/8	.3750	9.53	1/4	1-1/16	2-15/16	14°	C	C17715	C17566
SL-4	1/2	.5000	12.70	1/4	1-1/8	3	14°	C	C17716	C17567
SL-6	5/8	.6250	15.88	1/4	1-5/16	3-3/16	14°	C	C17717	C17587

METRIC SIZES

USCTI Number	Cutting Diameter		Shank Diameter	Length of Cut	Overall Length	Included Angle	Shank Type	Style 1852	
	MM	Dec Inch						RH Spiral Cut	Double Cut
SL-41	3	.1181	3	9.5	38.1	8°	A	C17720	C17595
SL-3	9.53	.3750	6	27.0	74.6	14°	C	C17719	C17593
SL-4	12.7	.5000	6	31.8	76.2	14°	C	—	C17594

Explanation of shank styles shown on page 91.



Customer Service: 800.348.2885

CLE-SD Ball Shaped



INCH SIZES

USCTI Number	Cutting Diameter			Shank Diameter	Length of Cut	Overall Length	Shank Type	Style 1853	
	Fractional	Decimal	Metric					RH Spiral Cut	Double Cut
SD-40	1/16	.0625	1.59	1/8	1/16	1-1/2	A	C17725	—
SD-41	3/32	.0938	2.38	1/8	3/32	1-1/2	A	C17726	—
SD-42	1/8	.1250	3.18	1/8	1/8	1-1/2	A	C17727	C17531
SD-11	1/8	.1250	3.18	1/4	1/8	2	C	C17730	C17530
SD-53	3/16	.1875	4.76	1/8	3/16	1-1/2	A	C17728	—
SD-14	3/16	.1875	4.76	1/4	3/16	2	C	C17731	C17532
SD-51	1/4	.2500	6.35	1/8	1/4	1-3/4	B	C17729	—
SD-1	1/4	.2500	6.35	1/4	1/4	2	D	C17732	C17533
SD-2	5/16	.3125	7.94	1/4	5/16	2-1/32	C	C17733	C17534
SD-3	3/8	.3750	9.53	1/4	3/8	2-5/64	C	C17734	C17535
SD-5	1/2	.5000	12.70	1/4	1/2	2-13/64	C	C17736	C17536
SD-6	5/8	.6250	15.88	1/4	5/8	2-5/16	C	C17737	C17537
SD-7	3/4	.7500	19.05	1/4	3/4	2-7/16	C	C17738	C17538
SD-9	1	1.0000	25.40	1/4	1	2-11/16	C	C17739	—

METRIC SIZES

USCTI Number	Cutting Diameter		Shank Diameter	Length of Cut	Overall Length	Shank Type	Style 1853	
	MM	Dec Inch					RH Spiral Cut	Double Cut
SD-40	1.59	.0625	3	1.6	38.1	A	C17723	—
SD-42	3	.1181	3	3.0	38.1	A	C17724	C17457
SD-53	4.76	.1875	3	4.76	38.1	A	C17741	C17412
SD-1	6	.2362	6	6.0	50.8	D	C17721	C17455
SD-51	6.35	.2500	3	6.35	44.45	B	—	C17411
SD-3	9.53	.3750	6	9.53	52.8	C	C17722	C17456
SD-5	12.7	.5000	6	12.7	56.0	C	C17740	C17458
SD-7	19.05	.7500	6	19.05	61.9	C	—	C17413

CLE-SH Flame Shaped



INCH SIZES

USCTI Number	Cutting Diameter			Shank Diameter	Length of Cut	Overall Length	Shank Type	Style 1854	
	Fractional	Decimal	Metric					RH Spiral Cut	Double Cut
SH-41	1/8	.1250	3.18	1/8	1/4	1-1/2	A	C17750	—
SH-2	5/16	.3125	7.94	1/4	3/4	2-1/2	C	—	C17562
SH-5	1/2	.5000	12.70	1/4	1-1/4	3	C	C17753	C17563

METRIC SIZES

USCTI Number	Cutting Diameter		Shank Diameter	Length of Cut	Overall Length	Shank Type	Style 1854	
	MM	Dec Inch					RH Spiral Cut	Double Cut
SH-53	4.76	.1875	3.0	9.5	38.1	A	C17749	C17529

Explanation of shank styles shown on page 91.



Customer Service: 800.348.2885

**Burs**

**CLE-SJ, CLE-SK Included Angle Burs (Countersink)**

**METRIC SIZES**



Style 1856/Style 1857 RH Spiral Cut

USCTI Number	Cutting Diameter		Shank Diameter	Overall Length	Included Angle	Shank Type	Style 1856	
	MM	Dec Inch					RH Spiral Cut	Double Cut
SJ-6	15.88	.6250	6	61.9	60°	C	C17766	—

USCTI Number	Cutting Diameter		Shank Diameter	Length of Cut	Overall Length	Included Angle	Shank Type	Style 1857	
	MM	Dec Inch						RH Spiral Cut	Double Cut
SK-5	12.7	.5000	6	6.35	57.9	90°	C	C17742	—
SK-6	15.88	.6250	6		61.9	90°	C	C17767	—

**CLE-SN Inverted Taper Burs**

**METRIC SIZES**



Style 1858 Double Cut

USCTI Number	Cutting Diameter		Shank Diameter	Length of Cut	Overall Length	Included Angle	Shank Type	Style 1858	
	MM	Dec Inch						RH Spiral Cut	Double Cut
SN-51	6.35	.2500	3.0	6.4	38.1	10°	A	—	C17780

**Right-Hand Spiral Bur Sets**



Style 1855 Item C17763

**INCH SIZES**

Set Contains USCTI Nos.	Cutting Diameter			Shank Diameter	Number of Pieces	Shank Type	Style 1855 RH Spiral Cut
	Fractional	Decimal	Metric				
SA-42, SA-43, SC-41, SC-42, SF-42, SG-42	3/32 & 1/8	.0938 .1250	2.38 3.18	1/8	9	A	C17760
SM-43, SE-41, SD-42 SA-51, SA-51-2, SC-51, SF-51, SG-51, SM-51, SE-51, SD-51, SN-51	1/4	.2500	6.35	1/8	9	B	C17761
SA-1, SC-1, SF-1, SG-1, SM-2, SE-1, SL-1, SD-1	1/4	.2500	6.35	1/4	8	C	C17762
SA-5, SC-5, SF-5, SG-5, SM-5, SE-5, SL-4, SD-5	1/2	.5000	12.70	1/4	8	C	C17763

Explanation of shank styles shown on page 91.



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C00449	449	80	C17061	1877	33	C17529	1854	97	C17612	1845	92
C00451	451	81	C17062	1877	33	C17530	1853	97	C17613	1845	92
C00517	517	80	C17066	1877	34	C17531	1853	97	C17615	1845	92
C00518	518	80	C17070	1877	34	C17532	1853	97	C17616	1845	92
C00525	525	80	C17074	1877	34	C17533	1853	97	C17618	1815	40
C00526	526	80	C17078	1877	34	C17534	1853	97	C17619	1815	40
C00528	528	80	C17082	1877	34	C17535	1853	97	C17622	1846	92
C00532	532	80	C17086	1877	34	C17536	1853	97	C17624	1846	92
C00533	533	80	C17090	1877	34	C17537	1853	97	C17625	1846	92
C00608	055	86	C17094	1877	34	C17538	1853	97	C17626	1846	92
C00609	055	86	C17100	1823	43	C17539	1847	93	C17627	1846	92
C00610	055	86	C17101	1823	43	C17540	1847	93	C17629	1846	92
C00611	055	86	C17102	1823	43	C17541	1847	93	C17631	1846	92
C00612	055	86	C17103	1823	43	C17542	1847	93	C17632	1846	93
C00613	055	86	C17104	1823	43	C17543	1847	93	C17633	1846	93
C00614	055	86	C17105	1823	43	C17544	1847	93	C17634	1847	93
C01112	1899	5	C17106	1823	43	C17545	1847	93	C17635	1847	93
C01125	1899	5	C17107	1823	43	C17546	1846	92	C17636	1847	93
C01137	1899	6	C17108	1823	43	C17547	1846	92	C17641	1847	93
C01164	1899	6	C17109	1823	43	C17548	1846	92	C17642	1847	93
C01180	1899	6	C17110	1823	43	C17549	1846	92	C17644	1847	93
C01190	1899	6	C17111	1823	43	C17550	1845	92	C17646	1847	93
C01202	1899	6	C17112	1823	43	C17551	1845	92	C17650	1848	94
C01213	1899	6	C17113	1823	43	C17552	1845	92	C17651	1848	94
C01223	1899	6	C17114	1823	43	C17553	1845	92	C17654	1848	94
C01234	1899	7	C17115	1823	43	C17554	1845	92	C17655	1848	94
C01243	1899	7	C17116	1823	43	C17555	1845	92	C17657	1848	94
C01253	1899	7	C17170	1829	45	C17556	1845	92	C17658	1848	94
C01262	1899	7	C17171	1829	45	C17557	1845	92	C17661	1848	94
C01338	1899	6	C17172	1829	45	C17558	1851	96	C17662	1848	94
C01802	1898	5	C17173	1829	45	C17559	1851	96	C17663	1848	94
C01807	1898	5	C17174	1829	45	C17560	1851	96	C17664	1850	95
C01810	1898	5	C17176	1829	45	C17561	1851	96	C17672	1850	95
C01815	1898	5	C17178	1829	45	C17562	1854	97	C17673	1850	95
C01820	1898	5	C17180	1829	45	C17563	1854	97	C17674	1849	95
C01826	1898	5	C17411	1853	97	C17564	1852	96	C17675	1849	94
C01829	1898	5	C17412	1853	97	C17565	1852	96	C17676	1849	94
C01831	1898	5	C17413	1853	97	C17566	1852	96	C17679	1849	94
C01834	1898	5	C17455	1853	97	C17567	1852	96	C17680	1849	94
C01912	1898	5	C17456	1853	97	C17568	1850	95	C17681	1849	94
C01924	1898	6	C17457	1853	97	C17569	1850	95	C17683	1849	94
C01938	1898	6	C17458	1853	97	C17570	1850	95	C17685	1849	94
C02070	1898	7	C17483	1849	95	C17571	1850	95	C17690	1850	95
C02073	1898	7	C17484	1849	95	C17572	1850	95	C17693	1850	95
C17003	1818	35, 47	C17485	1849	95	C17573	1850	95	C17694	1850	95
C17031	1877	33	C17486	1849	95	C17574	1850	95	C17695	1850	95
C17032	1877	33	C17487	1849	95	C17575	1849	94	C17696	1850	95
C17033	1877	33	C17488	1849	95	C17576	1849	94	C17698	1850	95
C17034	1877	33	C17489	1851	96	C17577	1849	94	C17699	1850	95
C17035	1877	33	C17496	1850	95	C17578	1849	94	C17700	1851	96
C17036	1877	33	C17497	1850	95	C17579	1849	94	C17702	1851	96
C17037	1877	33	C17498	1850	95	C17580	1848	94	C17703	1851	96
C17038	1877	33	C17499	1850	95	C17581	1848	94	C17704	1851	96
C17039	1877	33	C17502	1850	95	C17582	1848	94	C17705	1851	96
C17040	1877	33	C17507	1846	93	C17583	1848	94	C17706	1851	96
C17041	1877	33	C17508	1846	93	C17584	1848	94	C17708	1851	96
C17042	1877	33	C17509	1846	93	C17587	1852	96	C17711	1852	96
C17043	1877	33	C17510	1846	93	C17588	1845	92	C17713	1852	96
C17044	1877	33	C17511	1846	93	C17589	1845	92	C17714	1852	96
C17045	1877	33	C17512	1846	93	C17590	1845	92	C17715	1852	96
C17046	1877	33	C17513	1847	93	C17591	1845	92	C17716	1852	96
C17047	1877	33	C17514	1847	93	C17592	1845	92	C17717	1852	96
C17048	1877	33	C17515	1847	93	C17593	1852	96	C17719	1852	96
C17049	1877	33	C17517	1847	93	C17594	1852	96	C17720	1852	96
C17050	1877	33	C17518	1847	93	C17595	1852	96	C17721	1853	97
C17051	1877	33	C17519	1847	93	C17596	1848	94	C17722	1853	97
C17052	1877	33	C17520	1847	93	C17597	1848	94	C17723	1853	97
C17053	1877	33	C17521	1847	93	C17601	1845	92	C17724	1853	97
C17054	1877	33	C17522	1847	93	C17602	1845	92	C17725	1853	97
C17055	1877	33	C17523	1847	93	C17605	1845	92	C17726	1853	97
C17056	1877	33	C17524	1848	94	C17606	1845	92	C17727	1853	97
C17057	1877	33	C17525	1848	94	C17608	1845	92	C17728	1853	97
C17058	1877	33	C17526	1848	94	C17609	1845	92	C17729	1853	97
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C19196	1898T	3	C20462	1806	30	C20584	1894	32	C20706	1819	37
C19197	1898T	3	C20464	1806	30	C20585	1894	32	C20707	1819	37
C19198	1898T	3	C20466	1806	30	C20586	1894	32	C20708	1819	37
C19199	1898T	4	C20468	1806	30	C20587	1894	32	C20709	1819	37
C19200	1898T	4	C20470	1806	30	C20588	1894	32	C20710	1819	37
C19201	1898T	4	C20472	1806	30	C20589	1894	32	C20711	1819	37
C19202	1898T	4	C20478	2185	42	C20590	1894	32	C20712	1821	38
C19203	1898T	4	C20479	2185	42	C20591	1894	32	C20713	1821	38
C19204	1898T	4	C20480	2185	42	C20592	1894	32	C20714	1821	38
C19205	1898T	4	C20481	1807	30	C20596	1894	32	C20715	1821	38
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C20022	1894	31	C20491	1807	30	C20625	1808	4	C20720	1822	43
C20024	1894	31	C20493	1807	30	C20626	1808	4	C20721	1822	43
C20026	1894	31	C20495	1807	30	C20627	1808	4	C20722	1822	43
C20029	1894	31	C20497	1807	30	C20628	1808	4	C20723	1822	43
C20030	1894	31	C20500	1815	40	C20631	1809	12	C20724	1813	33
C20035	1894	32	C20501	1815	40	C20632	1809	12	C20725	1813	33
C20040	1894	32	C20503	1815	40	C20633	1809	12	C20726	1813	33
C20043	1894	32	C20510	1816	40	C20634	1809	12	C20727	1813	33
C20045	1894	32	C20511	1816	40	C20635	1809	12	C20728	1813	33
C20049	1894	31	C20512	1816	40	C20636	1809	12	C20729	1813	33
C20050	1894	31	C20513	1816	40	C20637	1809	12	C20730	1813	33
C20051	1894	31	C20514	1816	40	C20638	1809	12	C20731	1813	34
C20052	1894	31	C20516	1816	40	C20651	1812	20	C20732	1813	33
C20053	1894	31	C20517	1816	40	C20652	1812	20	C20733	1813	33
C20054	1894	31	C20518	1816	40	C20653	1812	20	C20734	1813	33
C20055	1894	31	C20524	1894	31	C20654	1812	20	C20735	1813	33
C20056	1894	31	C20525	1894	31	C20655	1812	20	C20736	1813	33
C20057	1894	31	C20526	1894	31	C20656	1812	20	C20737	1813	33
C20058	1894	31	C20527	1894	31	C20657	1812	20	C20738	1813	33
C20059	1894	31	C20528	1894	31	C20658	1812	20	C20739	1813	33
C20060	1894	31	C20529	1894	31	C20659	1809	12	C20740	1813	33
C20061	1894	31	C20530	1894	31	C20660	1809	12	C20741	1813	33
C20062	1894	31	C20535	1894	31	C20661	1809	12	C20742	1813	33
C20063	1894	31	C20540	1894	31	C20662	1809	12	C20743	1813	33
C20064	1894	31	C20543	1894	31	C20669	1813	33	C20744	1813	33
C20068	1894	32	C20545	1894	31	C20670	1892	33	C20745	1813	33
C20072	1894	32	C20549	1894	31	C20671	1892	33	C20746	1813	33
C20256	2184	42	C20550	1894	31	C20672	1892	33	C20747	1813	33
C20257	2184	42	C20551	1894	31	C20673	1892	33	C20748	1813	33
C20258	2184	42	C20552	1894	31	C20674	1892	33	C20749	1813	33
C20259	2184	42	C20553	1894	31	C20675	1892	33	C20750	1813	33
C20260	2184	42	C20554	1894	32	C20676	1892	33	C20751	1813	33
C20285	1874	39	C20555	1894	32	C20677	1892	33	C20752	1813	33
C20286	1874	39	C20556	1894	32	C20678	1892	33	C20753	1813	33
C20287	1874	39	C20557	1894	32	C20679	1892	33	C20754	1813	33
C20288	1874	39	C20558	1894	32	C20680	1892	33	C20755	1813	33
C20290	1874	39	C20559	1894	32	C20681	1892	33	C20756	1813	33
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C20295	1874TN	39	C20561	1894	32	C20683	1892	33	C20758	1813	34
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C20297	1874TN	39	C20563	1894	32	C20685	1892	33	C20760	1813	34
C20298	1874TN	39	C20564	1894	32	C20686	1892	33	C20761	1813	34
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C20306	1874	39	C20566	1894	32	C20688	1892	33	C20763	1813	34
C20307	1874	39	C20567	1894	32	C20689	1892	33	C20764	1813	34
C20315	1874TN	39	C20568	1894	32	C20690	1892	33	C20765	1813	34
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C20436	1806	30	C20571	1894	32	C20693	1892	33	C20879	2185F	42
C20438	1806	30	C20572	1894	32	C20694	1892	33	C20880	2185F	42
C20440	1806	30	C20573	1894	32	C20695	1892	33	C20891	1824	44
C20442	1806	30	C20574	1894	32	C20696	1892	34	C20892	1824	44
C20444	1806	30	C20575	1894	32	C20697	1892	34	C20893	1824	44
C20446	1806	30	C20576	1894	32	C20698	1892	34	C20894	1824	44
C20448	1806	30	C20577	1894	32	C20699	1892	34	C20895	1824	44
C20450	1806	30	C20578	1894	32	C20700	1819	37	C20896	1824	44
C20452	1806	30	C20579	1894	32	C20701	1819	37	C20897	1824	44
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C20920	1817	39	C21086	1813	34	C22645	1899	2	C22720	1899	3
C20930	1818	35	C21087	1813	34	C22646	1899	2	C22721	1899	3
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C20934	1818	35	C21101	1899	8, 46	C22650	1899	2	C22725	1899	3
C20935	1818	35	C21104	1898	8, 46	C22651	1899	2	C22726	1899	3
C20936	1818	35	C21105	1899	8, 46	C22652	1899	2	C22727	1899	3
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C20941	1818	35	C21112	1802	20, 46	C22657	1899	2	C22732	1899	4
C20942	1818	35	C21113	1898	8, 46	C22658	1899	2	C22733	1899	4
C20943	1818	35	C21114	1899	8, 46	C22659	1899	2	C22734	1899	4
C20944	1818	35	C21115	1801	13, 46	C22660	1899	2	C22735	1899	4
C20945	1818	35	C21117	1898	8, 46	C22661	1899	2	C22736	1899	4
C20946	1818	35	C21118	1899	8, 46	C22662	1899	2	C22737	1899	4
C20947	1818	35	C21119	1801	13, 46	C22663	1899	2	C22738	1899	4
C20948	1818	35	C21121	1802	20, 46	C22664	1899	2	C22739	1899	4
C20949	1818	35	C21122	1898	8, 46	C22665	1899	2	C22740	1899	4
C20950	1818	35	C21123	1899	8, 46	C22666	1899	2	C22741	1899	4
C20951	1818	35	C21124	1801	13, 46	C22667	1899	2	C22742	1899	4
C20952	1818	35	C21125	1802	20, 46	C22668	1899	2	C22743	1899	4
C20953	1818	35	C21126	1898	8, 46	C22669	1899	2	C22744	1899	4
C20954	1818	35	C21127	1899	8, 46	C22670	1899	2	C22745	1899	4
C20955	1817	39	C21128	1801	13, 46	C22671	1899	2	C22746	1899	4
C20956	1817	39	C21129	1802	20, 46	C22672	1899	2	C22747	1899	4
C20957	1817	39	C21130	1899	8, 46	C22673	1899	2	C22748	1899	4
C20958	1817	39	C21131	1899	8, 46	C22674	1899	2	C22749	1899	4
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C23670	1803	28	C23768	1805	29	C23907	1896	26	C24349	1898T	6
C23671	1803	28	C23769	1805	29	C23908	1896	26	C24350	1898T	6
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C23679	1803	28	C23781	1805	28	C23916	1896	26	C24358	1898T	6
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C23698	1803	28	C23839	1875R	22	C23935	1896	27	C24377	1898T	7
C23699	1803	28	C23840	1875R	22	C23936	1896	27	C24378	1898T	7
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C23704	1875L	22	C23845	1875R	22	C23941	1896	27	C30508	1880	23
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