

## General Purpose Styles 150, 150D, (150T)

### Features/Benefits:

- General-purpose geometry for drilling in a wide range of operating conditions and materials.
- Manufactured from premium high-speed steel.
- 118° point.
- The most popular drill for general-purpose applications.
- Metric sizes are manufactured to DIN 338 specifications.
- Bright, black oxide and titanium nitride (TiN) finishes standard from stock; alternate coatings available as stock modifications.

### Application Information:

- carbon steel (TiN, black oxide)
- cast iron (TiN, black oxide)
- non-ferrous materials (bright)

### Surface Treatment Information:

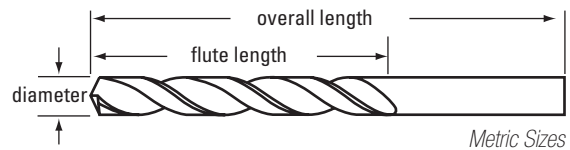
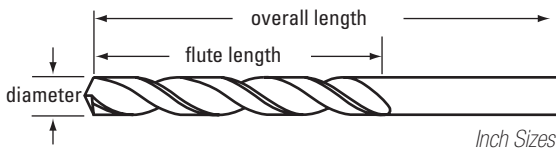
- Black oxide surface finish increases wear resistance and adds lubricity, improving chip flow.
- Titanium nitride (TiN) PVD coating adds lubricity and hardness which enhances chip flow, finish hole quality, and drill life.



Style 150 Black Oxide

Style 150D Bright Finish

Style 150-TN TiN-Coated



### INCH AND METRIC SIZES

Drill Diameter		Overall Length		Flute Length		Style 150	Style 150D	Style 150-TN			
Fraction	Wire/Let	Metric	Decimal	mm	Inch	mm	Inch	mm	Black Oxide	Bright*	TiN
80		.0135	0.34	.7500	19.05	.1250	3.18	44150	44350	70180	
		0.35	.0138	.7480	19.00	.1575	4.00	—	47210	—	
79	1/64	.0145	0.37	.7500	19.05	.1250	3.18	44149	44349	70179	
		0.40	.0156	0.40	.7500	19.05	.1875	4.76	44001	44201	70201
78		.0157	0.40	.7874	20.00	.1969	5.00	—	47211	—	
		0.45	.0160	0.41	.8750	22.23	.1875	4.76	44148	44348	70178
77		.0177	0.41	.7874	20.00	.1969	5.00	—	47212	—	
		0.50	.0180	0.46	.8750	22.23	.1875	4.76	44147	44347	70177
76		.0197	0.46	.8661	22.00	.2362	6.00	—	47213	—	
		0.55	.0200	0.51	.8750	22.23	.1875	4.76	44146	44346	70176
75		.0210	0.53	1.0000	25.40	.2500	6.35	44145	44345	70175	
		0.60	.0217	0.55	.9449	24.00	.2756	7.00	—	47214	—
74		.0225	0.57	1.0000	25.40	.2500	6.35	44144	44344	70174	
		0.65	.0236	0.60	.9449	24.00	.2756	7.00	—	47215	—
73		.0240	0.61	1.1250	28.58	.3125	7.94	44143	44343	70173	
		0.70	.0250	0.64	1.1250	28.58	.3125	7.94	44142	44342	70172

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\*Bright metric sizes are non-stocked standards (minimum order quantity required).

## General Purpose (continued) Styles 150, 150D, 150-TN (150T)

### INCH AND METRIC SIZES

Drill Diameter		Overall Length			Flute Length		Style 150	Style 150D	Style 150-TN		
Fraction	Wire/Let	Metric	Decimal	mm	Inch	mm	Inch	mm	Black Oxide	Bright*	TiN
		0.65	.0256		1.0236	26.00	.3150	8.00	—	47216	—
	71		.0260	0.66	1.2500	31.75	.3750	9.53	44141	44341	70171
		0.70	.0276		1.1024	28.00	.3543	9.00	—	47217	—
	70		.0280	0.71	1.2500	31.75	.3750	9.53	44140	44340	70170
	69		.0292	0.74	1.3750	34.93	.5000	12.70	44139	44339	70169
		0.75	.0295		1.1024	28.00	.3543	9.00	—	47218	—
	68		.0310	0.79	1.3750	34.93	.5000	12.70	44138	44338	70168
1/32			.0312	0.79	1.3750	34.93	.5000	12.70	44002	44202	70202
		0.80	.0315		1.1811	30.00	.3937	10.00	—	47219	—
	67		.0320	0.81	1.3750	34.93	.5000	12.70	44137	44337	70167
	66		.0330	0.84	1.3750	34.93	.5000	12.70	44136	44336	70166
		0.85	.0335		1.1811	30.00	.3937	10.00	—	47220	—
	65		.0350	0.89	1.5000	38.10	.6250	15.88	44135	44335	70165
		0.90	.0354		1.2598	32.00	.4331	11.00	—	47221	—
	64		.0360	0.91	1.5000	38.10	.6250	15.88	44134	44334	70164
	63		.0370	0.94	1.5000	38.10	.6250	15.88	44133	44333	70163
		0.95	.0374		1.2598	32.00	.4331	11.00	—	47222	—
	62		.0380	0.97	1.5000	38.10	.6250	15.88	44132	44332	70162
	61		.0390	0.99	1.6250	41.28	.6875	17.46	44131	44331	70161
		1.00	.0394		1.3386	34.00	.4724	12.00	47223	45223	70331
	60		.0400	1.02	1.6250	41.28	.6875	17.46	44130	44330	70160
	59		.0410	1.04	1.6250	41.28	.6875	17.46	44129	44329	70159
		1.05	.0413		1.3386	34.00	.4724	12.00	47224	45224	—
	58		.0420	1.07	1.6250	41.28	.6875	17.46	44128	44328	70158
	57		.0430	1.09	1.7500	44.45	.7500	19.05	44127	44327	70157
		1.10	.0433		1.4173	36.00	.5512	14.00	47225	45225	—
		1.15	.0453		1.4173	36.00	.5512	14.00	47226	45226	—
	56		.0465	1.18	1.7500	44.45	.7500	19.05	44126	44326	70156
3/64			.0469	1.19	1.7500	44.45	.7500	19.05	44003	44203	70203
		1.20	.0472		1.4961	38.00	.6299	16.00	47227	45227	—
		1.25	.0492		1.4961	38.00	.6299	16.00	47228	45228	70344
		1.30	.0512		1.4961	38.00	.6299	16.00	47229	45229	70345
	55		.0520	1.32	1.8750	47.63	.8750	22.23	44125	44325	70155
		1.35	.0531		1.5748	40.00	.7087	18.00	47230	45230	—
	54		.0550	1.40	1.8750	47.63	.8750	22.23	44124	44324	70154
		1.40	.0551		1.5748	40.00	.7087	18.00	47231	45231	—
		1.45	.0571		1.5748	40.00	.7087	18.00	47232	45232	70346
		1.50	.0591		1.5748	40.00	.7087	18.00	47233	45233	70347
	53		.0595	1.51	1.8750	47.63	.8750	22.23	44123	44323	70153
		1.55	.0610		1.6929	43.00	.7874	20.00	47234	45234	70348
1/16			.0625	1.59	1.8750	47.63	.8750	22.23	44004	44204	70204
		1.60	.0630		1.6929	43.00	.7874	20.00	47235	45235	—
	52		.0635	1.61	1.8750	47.63	.8750	22.23	44122	44322	70152
		1.65	.0650		1.6929	43.00	.7874	20.00	47236	45236	70349
		1.70	.0669		1.6929	43.00	.7874	20.00	47237	45237	—
	51		.0670	1.70	2.0000	50.80	1.0000	25.40	44121	44321	70151
		1.75	.0689		1.8110	46.00	.8661	22.00	47238	45238	70364
	50		.0700	1.78	2.0000	50.80	1.0000	25.40	44120	44320	70150

\*Bright metric sizes are non-stocked standards (minimum order quantity required).

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**General Purpose (continued)**  
**Styles 150, 150D, 150-TN (150T)**

**INCH AND METRIC SIZES**

Drill Diameter	Overall Length			Flute Length		Style 150	Style 150D	Style 150-TN		
	Fraction	Wire/Let	Metric	Inch	mm	Inch	mm	Black Oxide	Bright*	TiN
		1.80	.0709	1.8110	46.00	.8661	22.00	47239	45239	—
		1.85	.0728	1.8110	46.00	.8661	22.00	47240	45240	—
49		.0730	1.85	2.0000	50.80	1.0000	25.40	44119	44319	70149
		1.90	.0748	1.8110	46.00	.8661	22.00	47241	45241	—
48		.0760	1.93	2.0000	50.80	1.0000	25.40	44118	44318	70148
		1.95	.0768	1.9291	49.00	.9449	24.00	47242	45242	—
5/64		.0781	1.98	2.0000	50.80	1.0000	25.40	44005	44205	70205
	47	.0785	1.99	2.0000	50.80	1.0000	25.40	44117	44317	70147
		2.00	.0787	1.9291	49.00	.9449	24.00	47243	45243	70332
		2.05	.0807	1.9291	49.00	.9449	24.00	47244	45244	70365
46		.0810	2.06	2.1250	53.98	1.1250	28.58	44116	44316	70146
45		.0820	2.08	2.1250	53.98	1.1250	28.58	44115	44315	70145
		2.10	.0827	1.9291	49.00	.9449	24.00	47245	45245	70366
		2.15	.0846	2.0866	53.00	1.0630	27.00	47246	45246	—
44		.0860	2.18	2.1250	53.98	1.1250	28.58	44114	44314	70144
		2.20	.0866	2.0866	53.00	1.0630	27.00	47247	45247	70367
		2.25	.0886	2.0866	53.00	1.0630	27.00	47248	45248	—
43		.0890	2.26	2.2500	57.15	1.2500	31.75	44113	44313	70143
		2.30	.0906	2.0866	53.00	1.0630	27.00	47249	45249	70368
		2.35	.0925	2.0866	53.00	1.0630	27.00	47250	45250	—
42		.0935	2.37	2.2500	57.15	1.2500	31.75	44112	44312	70142
3/32		.0938	2.38	2.2500	57.15	1.2500	31.75	44006	44206	70206
		2.40	.0945	2.2441	57.00	1.1811	30.00	47251	45251	—
41		.0960	2.44	2.3750	60.33	1.3750	34.93	44111	44311	70141
		2.45	.0965	2.2441	57.00	1.1811	30.00	47252	45252	—
40		.0980	2.49	2.3750	60.33	1.3750	34.93	44110	44310	70140
		2.50	.0984	2.2441	57.00	1.1811	30.00	47253	45253	70369
39		.0995	2.53	2.3750	60.33	1.3750	34.93	44109	44309	70139
38		.1015	2.58	2.5000	63.50	1.4375	36.51	44108	44308	70138
		2.60	.1024	2.2441	57.00	1.1811	30.00	47254	45254	—
37		.1040	2.64	2.5000	63.50	1.4375	36.51	44107	44307	70137
		2.70	.1063	2.4016	61.00	1.2992	33.00	47255	45255	—
36		.1065	2.71	2.5000	63.50	1.4375	36.51	44106	44306	70136
7/64		.1094	2.78	2.6250	66.68	1.5000	38.10	44007	44207	70207
35		.1100	2.79	2.6250	66.68	1.5000	38.10	44105	44305	70135
		2.80	.1102	2.4016	61.00	1.2992	33.00	47257	45257	70370
34		.1110	2.82	2.6250	66.68	1.5000	38.10	44104	44304	70134
33		.1130	2.87	2.6250	66.68	1.5000	38.10	44103	44303	70133
		2.90	.1142	2.4016	61.00	1.2992	33.00	47258	45258	70371
32		.1160	2.95	2.7500	69.85	1.6250	41.28	44102	44302	70132
		3.00	.1181	2.4016	61.00	1.2992	33.00	47259	45259	70333
31		.1200	3.05	2.7500	69.85	1.6250	41.28	44101	44301	70131
		3.10	.1220	2.5591	65.00	1.4173	36.00	47260	45260	70372
1/8		.1250	3.18	2.7500	69.85	1.6250	41.28	44008	44208	70208
		3.20	.1260	2.5591	65.00	1.4173	36.00	47261	45261	70373
30		.1285	3.26	2.7500	69.85	1.6250	41.28	44100	44300	70130
		3.30	.1299	2.5591	65.00	1.4173	36.00	47263	45263	70374
		3.40	.1339	2.7559	70.00	1.5354	39.00	47264	45264	70375

\*Bright metric sizes are non-stocked standards (minimum order quantity required).

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## General Purpose (continued) Styles 150, 150D, 150-TN (150T)

### INCH AND METRIC SIZES

Drill Diameter		Overall Length			Flute Length		Style 150	Style 150D	Style 150-TN		
Fraction	Wire/Let	Metric	Decimal	mm	Inch	mm	Black Oxide	Bright*	TiN		
29			.1360	3.45	2.8750	73.03	1.7500	44.45	44099	44299	70129
		3.50	.1378		2.7559	70.00	1.5354	39.00	47265	45265	70376
28			.1405	3.57	2.8750	73.03	1.7500	44.45	44098	44298	70128
	9/64		.1406	3.57	2.8750	73.03	1.7500	44.45	44009	44209	70209
27		3.60	.1417		2.7559	70.00	1.5354	39.00	47266	45266	—
			.1440	3.66	3.0000	76.20	1.8750	47.63	44097	44297	70127
26		3.70	.1457		2.7559	70.00	1.5354	39.00	47267	45267	70377
			.1470	3.73	3.0000	76.20	1.8750	47.63	44096	44296	70126
25			.1495	3.80	3.0000	76.20	1.8750	47.63	44095	44295	70125
		3.80	.1496		2.9528	75.00	1.6929	43.00	47269	45269	—
24			.1520	3.86	3.1250	79.38	2.0000	50.80	44094	44294	70124
		3.90	.1535		2.9528	75.00	1.6929	43.00	47270	45270	—
23			.1540	3.91	3.1250	79.38	2.0000	50.80	44093	44293	70123
	5/32		.1562	3.97	3.1250	79.38	2.0000	50.80	44010	44210	70210
22			.1570	3.99	3.1250	79.38	2.0000	50.80	44092	44292	70122
		4.00	.1575		2.9528	75.00	1.6929	43.00	47271	45271	70334
21			.1590	4.04	3.2500	82.55	2.1250	53.98	44091	44291	70121
	20		.1610	4.09	3.2500	82.55	2.1250	53.98	44090	44290	70120
		4.10	.1614		2.9528	75.00	1.6929	43.00	47272	45272	—
19			.1654		2.9528	75.00	1.6929	43.00	47273	45273	70378
			.1660	4.22	3.2500	82.55	2.1250	53.98	44089	44289	70119
18		4.30	.1693		3.1496	80.00	1.8504	47.00	47275	45275	—
			.1695	4.31	3.2500	82.55	2.1250	53.98	44088	44288	70118
11/64			.1719	4.37	3.2500	82.55	2.1250	53.98	44011	44211	70211
	17		.1730	4.39	3.3750	85.73	2.1875	55.56	44087	44287	70117
		4.40	.1732		3.1496	80.00	1.8504	47.00	47276	45276	—
16			.1770	4.50	3.3750	85.73	2.1875	55.56	44086	44286	70116
		4.50	.1772		3.1496	80.00	1.8504	47.00	47277	45277	70379
15			.1800	4.57	3.3750	85.73	2.1875	55.56	44085	44285	70115
		4.60	.1811		3.1496	80.00	1.8504	47.00	47278	45278	—
14			.1820	4.62	3.3750	85.73	2.1875	55.56	44084	44284	70114
	13		.1850	4.70	3.5000	88.90	2.3125	58.74	44083	44283	70113
		4.70	.1850		3.1496	80.00	1.8504	47.00	47279	45279	—
3/16			.1875	4.76	3.5000	88.90	2.3125	58.74	44012	44212	70212
	12		.1890	4.80	3.5000	88.90	2.3125	58.74	44082	44282	70112
		4.80	.1890		3.3858	86.00	2.0472	52.00	47281	45281	—
11			.1910	4.85	3.5000	88.90	2.3125	58.74	44081	44281	70111
		4.90	.1929		3.3858	86.00	2.0472	52.00	47282	45282	70380
10			.1935	4.91	3.6250	92.08	2.4375	61.91	44080	44280	70110
	9		.1960	4.98	3.6250	92.08	2.4375	61.91	44079	44279	70109
		5.00	.1969		3.3858	86.00	2.0472	52.00	47283	45283	70335
8			.1990	5.05	3.6250	92.08	2.4375	61.91	44078	44278	70108
		5.10	.2008		3.3858	86.00	2.0472	52.00	47284	45284	—
7			.2010	5.11	3.6250	92.08	2.4375	61.91	44077	44277	70107
	13/64		.2031	5.16	3.6250	92.08	2.4375	61.91	44013	44213	70213
6			.2040	5.18	3.7500	95.25	2.5000	63.50	44076	44276	70106
		5.20	.2047		3.3858	86.00	2.0472	52.00	47285	45285	—
5			.2055	5.22	3.7500	95.25	2.5000	63.50	44075	44275	70105

\*Bright metric sizes are non-stocked standards (minimum order quantity required).

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**General Purpose (continued)**  
**Styles 150, 150D, 150-TN (150T)**

**INCH AND METRIC SIZES**

Drill Diameter	Overall Length			Flute Length		Style 150	Style 150D	Style 150-TN			
	Fraction	Wire/Let	Metric	Decimal	mm	Inch	mm	Black Oxide	Bright*	TiN	
4		5.30	.2087		3.3858	86.00	2.0472	52.00	47287	45287	—
			.2090	5.31	3.7500	95.25	2.5000	63.50	44074	44274	70104
3		5.40	.2126		3.6614	93.00	2.2441	57.00	47288	45288	—
			.2130	5.41	3.7500	95.25	2.5000	63.50	44073	44273	70103
7/32		5.50	.2165		3.6614	93.00	2.2441	57.00	47289	45289	70381
			.2188	5.56	3.7500	95.25	2.5000	63.50	44014	44214	70214
2		5.60	.2205		3.6614	93.00	2.2441	57.00	47290	45290	—
			.2210	5.61	3.8750	98.43	2.6250	66.68	44072	44272	70102
1		5.70	.2244		3.6614	93.00	2.2441	57.00	47291	45291	70382
			.2280	5.79	3.8750	98.43	2.6250	66.68	44071	44271	70101
15/64		5.80	.2283		3.6614	93.00	2.2441	57.00	47293	45293	—
			.2323		3.6614	93.00	2.2441	57.00	47294	45294	—
A			.2340	5.94	3.8750	98.43	2.6250	66.68	44171	44371	70301
			.2344	5.95	3.8750	98.43	2.6250	66.68	44015	44215	70215
B		6.00	.2362		3.6614	93.00	2.2441	57.00	47295	45295	70336
			.2380	6.05	4.0000	101.60	2.7500	69.85	44172	44372	70302
C		6.10	.2402		3.9764	101.00	2.4803	63.00	47296	45296	—
			.2420	6.15	4.0000	101.60	2.7500	69.85	44173	44373	70303
D		6.20	.2441		3.9764	101.00	2.4803	63.00	47297	45297	—
			.2460	6.25	4.0000	101.60	2.7500	69.85	44174	44374	70304
1/4		6.30	.2480		3.9764	101.00	2.4803	63.00	47299	45299	—
		E	.2500	6.35	4.0000	101.60	2.7500	69.85	44016	44216	70216
F		6.40	.2520		3.9764	101.00	2.4803	63.00	47300	45300	70383
			.2559		3.9764	101.00	2.4803	63.00	47301	45301	70384
G		6.50	.2570	6.53	4.1250	104.78	2.8750	73.03	44176	44376	70306
			.2598		3.9764	101.00	2.4803	63.00	47302	45302	—
17/64		6.60	.2610	6.63	4.1250	104.78	2.8750	73.03	44177	44377	70307
			.2638		3.9764	101.00	2.4803	63.00	47303	45303	70385
H		6.70	.2656	6.75	4.1250	104.78	2.8750	73.03	44017	44217	70217
			.2660	6.76	4.1250	104.78	2.8750	73.03	44178	44378	70308
I		6.80	.2677		4.2913	109.00	2.7165	69.00	47305	45305	70386
			.2717		4.2913	109.00	2.7165	69.00	47306	45306	—
J		6.90	.2720	6.91	4.1250	104.78	2.8750	73.03	44179	44379	70309
			.2756		4.2913	109.00	2.7165	69.00	47307	45307	70337
K		7.00	.2770	7.04	4.1250	104.78	2.8750	73.03	44180	44380	70310
			.2795		4.2913	109.00	2.7165	69.00	47308	45308	—
9/32		7.10	.2810	7.14	4.2500	107.95	2.9375	74.61	44181	44381	70311
			.2812	7.14	4.2500	107.95	2.9375	74.61	44018	44218	70218
L		7.20	.2835		4.2913	109.00	2.7165	69.00	47309	45309	70387
			.2874		4.2913	109.00	2.7165	69.00	47311	45311	—
M		7.30	.2900	7.37	4.2500	107.95	2.9375	74.61	44182	44382	70312
			.2913		4.2913	109.00	2.7165	69.00	47312	45312	—
19/64		7.40	.2950	7.49	4.3750	111.13	3.0625	77.79	44183	44383	70313
			.2953		4.2913	109.00	2.7165	69.00	47313	45313	70388
N		7.50	.2969	7.54	4.3750	111.13	3.0625	77.79	44019	44219	70219
			.2992		4.6063	117.00	2.9528	75.00	47314	45314	—
		7.60	.3020	7.67	4.3750	111.13	3.0625	77.79	44184	44384	70314
		7.70	.3031		4.6063	117.00	2.9528	75.00	47315	45315	—

\*Bright metric sizes are non-stocked standards (minimum order quantity required).

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## General Purpose (continued) Styles 150, 150D, 150-TN (150T)

### INCH AND METRIC SIZES

Drill Diameter		Overall Length			Flute Length		Style 150	Style 150D	Style 150-TN		
Fraction	Wire/Let	Metric	Decimal	mm	Inch	mm	Black Oxide	Bright*	TiN		
		7.80	.3071		4.6063	117.00	2.9528	75.00	47317	45317	—
		7.90	.3110		4.6063	117.00	2.9528	75.00	47318	45318	—
5/16			.3125	7.94	4.5000	114.30	3.1875	80.96	44020	44220	70220
		8.00	.3150		4.6063	117.00	2.9528	75.00	47319	45319	70338
	O		.3160	8.03	4.5000	114.30	3.1875	80.96	44185	44385	70315
		8.10	.3189		4.6063	117.00	2.9528	75.00	47320	45320	—
		8.20	.3228		4.6063	117.00	2.9528	75.00	47321	45321	—
	P		.3230	8.20	4.6250	117.48	3.3125	84.14	44186	44386	70316
		8.30	.3268		4.6063	117.00	2.9528	75.00	47323	45323	—
21/64			.3281	8.33	4.6250	117.48	3.3125	84.14	44021	44221	70221
		8.40	.3307		4.6063	117.00	2.9528	75.00	47324	45324	—
	Q		.3320	8.43	4.7500	120.65	3.4375	87.31	44187	44387	70317
		8.50	.3346		4.6063	117.00	2.9528	75.00	47325	45325	70389
		8.60	.3386		4.9213	125.00	3.1890	81.00	47326	45326	—
	R		.3390	8.61	4.7500	120.65	3.4375	87.31	44188	44388	70318
		8.70	.3425		4.9213	125.00	3.1890	81.00	47327	45327	70390
11/32			.3438	8.73	4.7500	120.65	3.4375	87.31	44022	44222	70222
		8.80	.3465		4.9213	125.00	3.1890	81.00	47329	45329	—
	S		.3480	8.84	4.8750	123.83	3.5000	88.90	44189	44389	70319
		8.90	.3504		4.9213	125.00	3.1890	81.00	47330	45330	—
		9.00	.3543		4.9213	125.00	3.1890	81.00	47331	45331	70339
	T		.3580	9.09	4.8750	123.83	3.5000	88.90	44190	44390	70320
		9.10	.3583		4.9213	125.00	3.1890	81.00	47332	45332	—
23/64			.3594	9.13	4.8750	123.83	3.5000	88.90	44023	44223	70223
		9.20	.3622		4.9213	125.00	3.1890	81.00	47333	45333	—
		9.30	.3661		4.9213	125.00	3.1890	81.00	47335	45335	—
	U		.3680	9.35	5.0000	127.00	3.6250	92.08	44191	44391	70321
		9.40	.3701		4.9213	125.00	3.1890	81.00	47336	45336	—
		9.50	.3740		4.9213	125.00	3.1890	81.00	47337	45337	70391
3/8			.3750	9.53	5.0000	127.00	3.6250	92.08	44024	44224	70224
	V		.3770	9.58	5.0000	127.00	3.6250	92.08	44192	44392	70322
		9.60	.3780		5.2362	133.00	3.4252	87.00	47338	45338	—
		9.70	.3819		5.2362	133.00	3.4252	87.00	47339	45339	—
		9.80	.3858		5.2362	133.00	3.4252	87.00	47341	45341	—
	W		.3860	9.80	5.1250	130.18	3.7500	95.25	44193	44393	70323
		9.90	.3898		5.2362	133.00	3.4252	87.00	47342	45342	—
25/64			.3906	9.92	5.1250	130.18	3.7500	95.25	44025	44225	70225
		10.00	.3937		5.2362	133.00	3.4252	87.00	47343	45343	70340
	X		.3970	10.08	5.1250	130.18	3.7500	95.25	44194	44394	70324
		10.20	.4016		5.2362	133.00	3.4252	87.00	47354	45354	70392
	Y		.4040	10.26	5.2500	133.35	3.8750	98.43	44195	44395	70325
13/32			.4062	10.32	5.2500	133.35	3.8750	98.43	44026	44226	70226
	Z		.4130	10.49	5.2500	133.35	3.8750	98.43	44196	44396	70326
		10.50	.4134		5.2362	133.00	3.4252	87.00	47344	45344	70393
27/64			.4219	10.72	5.3750	136.53	3.9375	100.01	44027	44227	70227
		10.80	.4252		5.5905	142.00	3.7008	94.00	47356	45356	—
		11.00	.4331		5.5905	142.00	3.7008	94.00	47345	45345	70341
7/16			.4375	11.11	5.5000	139.70	4.0625	103.19	44028	44228	70228

\*Bright metric sizes are non-stocked standards (minimum order quantity required).

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DRILLS

REAMERS

OTHER TOOLS

SETS

INDEX

**General Purpose (continued)**  
**Styles 150, 150D, 150-TN (150T)**

**INCH AND METRIC SIZES**

Drill Diameter				Overall Length		Flute Length		Style 150	Style 150D	Style 150-TN	
Fraction	Wire/Let	Metric	Decimal	mm	Inch	mm	Inch	mm	Black Oxide	Bright*	TiN
		11.20	.4409		5.5905	142.00	3.7008	94.00	47357	45357	70394
		11.50	.4528		5.5905	142.00	3.7008	94.00	47346	45346	70395
29/64			.4531	11.51	5.6250	142.88	4.1875	106.36	44029	44229	70229
		11.80	.4646		5.5905	142.00	3.7008	94.00	47358	45358	—
15/32			.4688	11.91	5.7500	146.05	4.3125	109.54	44030	44230	70230
		12.00	.4724		5.9449	151.00	3.9764	101.00	47347	45347	70342
		12.20	.4803		5.9449	151.00	3.9764	101.00	47359	45359	70396
31/64			.4844	12.30	5.8750	149.23	4.3750	111.13	44031	44231	70231
		12.50	.4921		5.9449	151.00	3.9764	101.00	47348	45348	70397
1/2			.5000	12.70	6.0000	152.40	4.5000	114.30	44032	44232	70232
		12.80	.5039		5.9449	151.00	3.9764	101.00	47360	45360	—
		13.00	.5118		5.9449	151.00	3.9764	101.00	47349	45349	70343
33/64			.5156	13.10	6.6250	168.28	4.8125	122.24	44033	44233	70233
		13.20	.5197		5.9449	151.00	3.9764	101.00	47361	45361	—
17/32			.5312	13.49	6.6250	168.28	4.8125	122.24	44034	44234	70234
		13.50	.5315		6.2992	160.00	4.2520	108.00	47363	45363	—
		13.80	.5433		6.2992	160.00	4.2520	108.00	47364	45364	—
35/64			.5469	13.89	6.6250	168.28	4.8125	122.24	44035	44235	70235
		14.00	.5512		6.2992	160.00	4.2520	108.00	47362	45362	—
		14.25	.5610		6.2992	160.00	4.2520	108.00	47365	45365	—
9/16			.5625	14.29	6.6250	168.28	4.8125	122.24	44036	44236	70236
		14.50	.5709		6.6535	169.00	4.4882	114.00	47366	45366	—
37/64			.5781	14.68	6.6250	168.28	4.8125	122.24	44037	44237	70237
		14.75	.5807		6.6535	169.00	4.4882	114.00	47367	45367	—
		15.00	.5906		6.6535	169.00	4.4882	114.00	47369	45369	—
19/32			.5938	15.08	7.1250	180.98	5.1875	131.76	44038	44238	70238
		15.25	.6004		6.6535	169.00	4.4882	114.00	47370	45370	—
39/64			.6094	15.48	7.1250	180.98	5.1875	131.76	44039	44239	70239
		15.50	.6102		7.0079	178.00	4.7244	120.00	47368	45368	—
		15.75	.6201		7.0079	178.00	4.7244	120.00	47371	45371	—
5/8			.6250	15.88	7.1250	180.98	5.1875	131.76	44040	44240	70240
		16.00	.6299		7.0079	178.00	4.7244	120.00	47372	45372	—
		16.25	.6398		7.0079	178.00	4.7244	120.00	47373	45373	—
41/64			.6406	16.27	7.1250	180.98	5.1875	131.76	44041	44241	70241
		16.50	.6496		7.2441	184.00	4.9213	125.00	47374	45374	—
21/32			.6562	16.67	7.1250	180.98	5.1875	131.76	44042	44242	70242
		16.75	.6594		7.2441	184.00	4.9213	125.00	47376	45376	—
		17.00	.6693		7.2441	184.00	4.9213	125.00	47377	45377	—
43/64			.6719	17.07	7.1250	180.98	5.1875	131.76	44043	44243	70243
		17.25	.6791		7.2441	184.00	4.9213	125.00	47378	45378	—
11/16			.6875	17.46	7.6250	180.98	5.6250	131.76	44044	44244	70244
		17.50	.6890		7.5197	191.00	5.1181	130.00	47375	45375	—

\*Bright metric sizes are non-stocked standards (minimum order quantity required).

sets listed on next page

## General Purpose (continued) Styles 150, 150D, 150-TN (150T)

### INCH AND METRIC SETS

#### Sets in Metal Index Cases

Number of Tools	Size Range	Style 150 Black Oxide	Style 150D Bright	Style 150-TN TiN
13	1/16 - 1/4 X 1/64	57711	49911	—
15	1/16 - 1/2 X 1/32	57713	49913	69862
21	1/16 - 3/8 X 1/64	57712	49912	—
29	1/16 - 1/2 X 1/64	57714	49914	69861
26	Letters A - Z	57718	49918	69883
60	#1 - #60 wire gauge	57716	49916	69863
80	#1 - #80 wire gauge	57717	—	—
20	#61 - #80 wire gauge	57720	57715	69897
115	1/16 - 1/2 X 1/64, A - Z, #1 - #60	57728	49928	—
114	1/16 - 1/2 X 1/64, #1 - #60, 1mm - 13mm X 0.5mm	57726	—	—
11	1mm - 6mm X 0.5mm	57723	—	—
13	1mm - 7mm X 0.5mm	57729	—	—
25	1mm - 13mm X 0.5mm	57725	—	—
118	1mm - 13mm X 0.1mm	57727	—	—



Set 57713



Set 57714



Set 69861

### DRILL REGRINDING

Good tool management is knowing how to recognize drill wear in preparation for re-sharpening. Signs of wear start as soon as the drill starts to cut. All tool regrinding should be done by machine.

1. Removal of Worn Section: Wear on the outer corners will appear as a slight rounding. You will see wear on the cutting lips and on the chisel-edge. If the drill is used at this point, it will only rub in the hole rather than cut.

With this condition of wear on the point, the horsepower and thrust increases, which in turn increases wear at a faster rate. Wear will appear along the margins. This could result in loss of size. To sharpen a tool in this condition, you will have to remove all of this worn section. Assuming that you are cutting off 1/4" to 1/2" of worn material with an abrasive cutoff wheel, care is needed not to burn the high-speed steel. If this happens you will lower the hardness by about 5Rc points, softening the steel and resulting in a dramatic loss of performance.

2. Web Thinning: Most standard drills have webs, which increase in diameter all the way to the shank end. As the drill is resharpened, the web will get thicker, and web thinning is necessary. Web thinning is done on a tool and cutter grinder or CNC for accurate control. The same amount of stock should be removed from both sides to ensure web centrality. If web centrality is incorrect you can cause rapid wear failure and an out-of-round hole. Free cutting wheels should be used to not burn the cutting edges. The contour of the flute should be blended in with the original web shape to not hinder chip flow.

3. Drill Pointing: This is the most critical operation in drill re-sharpening. The two cutting lips of a drill should be accurately ground to equal angles and equal length. If your drill point has lips of equal length but at unequal angles, or vice versa, one cutting edge will do most of the cutting and will cause an over-size condition, excessive wear, and short tool life.

4. Lip Relief Angles: The lip relief angle is the angle measured across the margin at the periphery of the drill. This angle has a bearing on the amount of clearance to obtain the correct chisel edge angle. When grinding the lip relief angle, both sides should be on the same plane. In general, the diameter of the tool dictates what that angle should be. Fragile, small diameter tools require larger clearance angles to help them penetrate. For instance, a #80-#61 would have an angle of 24°, a 3/4" tool would be about 8° to 10°. Material hardness also plays here. If drilling harder materials, reduce angles by 2° and increase for softer materials by 2°.

For more information, see the USCTI brochure, "Tolerances for Twist Drills and Reamers."

## TECH TIP