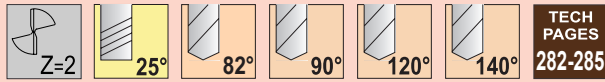
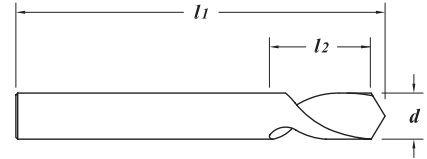


<i>d</i>	+0.000" -0.005" (+0.000 -0.127mm)
<i>l<sub>1</sub></i>	+0.125" -0.125" (+3.175 -3.175mm)



### N/C Spotting

- Solid submicron grain carbide drill
- For spotting to stabilize long drills
- Rough, angled or spherical surfaces
- No O.D. clearance
- For locating on true position
- Live tooling recommended on lathe processes



82° EDP#	90° EDP#	120° EDP#	140° EDP#	<i>d</i> † Diameter		<i>l<sub>1</sub></i> Overall Length	<i>l<sub>2</sub></i> Flute Length	1-11	12-24	25-49	50-100
				Decimal	Metric						
91650	91500	91572	91240	.0787	2.000	50	10	9.43	9.02	8.61	8.20
91652	91505	91575	91245	.0938	3/32"	2"	3/8"	10.68	10.22	9.75	9.29
-	91510	91580	91250	.1181	3.000	50	10	12.58	12.03	11.49	10.94
91656	91000	91100	91260	.1250	1/8"	2"	3/8"	12.58	12.03	11.49	10.94
91658	91520	91590	91270	.1575	4.000	50	12	16.46	15.74	15.03	14.31
91660	91010	91110	91280	.1875	3/16"	3"	3/4"	16.46	15.74	15.03	14.31
-	91530	91600	91290	.1969	5.000	65	15	17.30	16.54	15.79	15.04
91664	91540	91610	91300	.2362	6.000	65	20	19.54	18.69	17.84	16.99
91666	91020	91120	91310	.2500	1/4"	3"	3/4"	19.54	18.69	17.84	16.99
91668	91025	91125	91315	.3125	5/16"	3"	1"	23.63	22.61	21.58	20.55
91670	91550	91620	91320	.3150	8.000	75	25	23.63	22.61	21.58	20.55
91672	91030	91130	91330	.3750	3/8"	3"	1"	25.63	24.52	23.40	22.29
-	91560	91630	91340	.3937	10.000	88	25	35.36	33.83	32.29	30.75
91676	91565	91635	91345	.4375	7/16"	4"	1"	39.48	37.76	36.05	34.33
-	91570	91640	91350	.4724	12.000	100	30	42.50	40.66	38.81	36.96
91680	91040	91140	91360	.5000	1/2"	4"	1"	44.21	42.28	40.36	38.44
-	91050	91170	91370	.5512	14.000	100	30	76.18	72.86	69.55	66.24
91684	91060	91180	91380	.5625	9/16"	4"	1"	83.06	79.45	75.84	72.23
91686	91070	91190	91390	.6250	5/8"	5"	1"	101.91	97.48	93.05	88.62
91688	91080	91200	91400	.6299	16.000	125	30	104.64	100.09	95.54	90.99
91690	91090	91210	91410	.7087	18.000	125	30	143.54	137.30	131.06	124.82
91692	91150	91220	91420	.7500	3/4"	5"	1"	147.44	141.03	134.62	128.21
-	91160	91230	91430	.7874	20.000	125	30	159.63	152.69	145.75	138.81

**TOLERANCES**

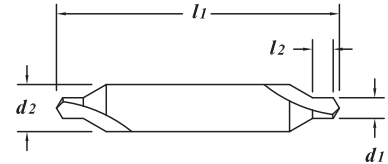
$d_1$	+0.03" -0.00" (+.0762 -0.000mm)
$d_2$	h6
$l_1$	+0.125" -0.125" (+3.175 -3.175mm)
$l_2$	+0.008" -0.008" (+.203 -0.203mm)



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**Combined Drill and Countersink**

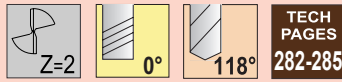
Solid submicron grain carbide drill  
 For center drilling applications  
 60° ±0°30' included countersink angle  
 Live tooling recommended on lathe processes  
 Drill length ( $l_2$ ) is equal to drill diameter ( $d_1$ )  
 Not able to be altered



EDP #	Number	$d_1$ † Diameter		$d_2$ Shank Diameter	$l_1$ Overall Length	$l_2$ Drill Length	1-11	12-24	25-49	50-100	
		Decimal	Metric								
58030	1	.0469	3/64"	1.191	1/8"	1-1/2"	.0469	14.12	13.51	12.89	12.28
58040	2	.0781	5/64"	1.984	3/16"	2"	.0781	22.23	21.26	20.30	19.33
58050	3	.1094	7/64"	2.779	1/4"	2"	.1094	25.32	24.22	23.12	22.02
58060	4	.1250	1/8"	3.175	5/16"	2-1/8"	.1250	35.44	33.90	32.36	30.82
58070	5	.1875	3/16"	4.763	7/16"	2-3/4"	.1875	50.62	48.42	46.22	44.02
58080	6	.2188	7/32"	5.558	1/2"	3"	.2188	67.39	64.46	61.53	58.60
58090	7	.2500	1/4"	6.350	5/8"	3-1/8"	.2500	90.19	86.27	82.35	78.43
58100	8	.3125	5/16"	7.938	3/4"	3-3/8"	.3125	114.69	109.70	104.72	99.73



Packaging

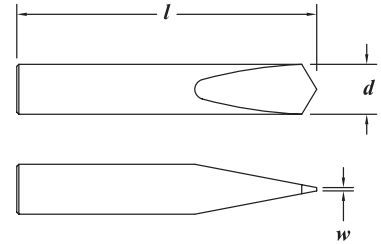


### Spade

Solid submicron grain carbide drill

For shallow hole drilling / burnishing to a depth of 1 to 1.5 times the diameter

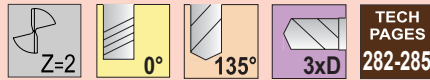
Live tooling recommended on lathe processes



EDP#	$d^\dagger$ Diameter		$l$ Overall Length	$w$ Spade Width	1-11	12-24	25-49	50-100	
	Decimal	Metric							
57030	.0625	1/16"	1.588	1-3/4"	.010"	6.88	6.58	6.28	5.98
57040	.0781	5/64"	1.984	1-3/4"	.010"	7.25	6.93	6.62	6.30
57050	.0938	3/32"	2.383	1-3/4"	.015"	7.25	6.93	6.62	6.30
57060	.1094	7/64"	2.779	1-3/4"	.015"	8.02	7.67	7.32	6.97
57070	.1250	1/8"	3.175	1-3/4"	.015"	8.02	7.67	7.32	6.97
57080	.1562	5/32"	3.967	1-3/4"	.020"	8.40	8.03	7.67	7.30
57090	.1875	3/16"	4.763	2"	.020"	8.98	8.59	8.20	7.81
57100	.2188	7/32"	5.558	2"	.025"	12.35	11.81	11.28	10.74
57110	.2500	1/4"	6.350	2"	.025"	14.43	13.81	13.18	12.55
57120	.2812	9/32"	7.142	2"	.030"	16.64	15.92	15.19	14.47
57130	.3125	5/16"	7.938	2"	.030"	20.09	19.22	18.34	17.47
57140	.3438	11/32"	8.733	2-1/2"	.035"	21.75	20.80	19.86	18.91
57150	.3750	3/8"	9.525	2-1/2"	.035"	23.43	22.41	21.39	20.37
57160	.4062	13/32"	10.317	2-1/2"	.045"	27.92	26.71	25.49	24.28
57170	.4375	7/16"	11.113	2-1/2"	.050"	31.29	29.93	28.57	27.21
57180	.4688	15/32"	11.908	2-1/2"	.055"	36.09	34.52	32.95	31.38
57190	.5000	1/2"	12.700	3"	.060"	39.30	37.59	35.88	34.17

**TOLERANCES**

<b>d</b>	+.0000" - .0005" (+.0000 - .0127mm)	
<b>l1</b>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)
<b>l2</b>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)



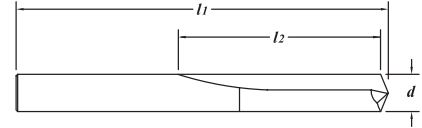
**Series 1500**

.0625" - .1660"  
(1.588mm - 4.216mm)

Recommended for high nickel, cobalt-based, and powdered metals

**Hard Metal**

- Solid submicron grain carbide drill
- Straight flute design provides excellent rigidity
- Materials 40 Rc and higher
- Live tooling recommended on lathe processes
- Hardlube Coating - page 55



EDP#	<b>d</b> <sup>†</sup> Diameter		<b>l1</b> Overall Length	<b>l2</b> Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
59165	.0625	1/16"	1.588	1-3/4"	5/8"	9.72	9.30	8.87	8.45
59180	.0700	#50	1.778	1-3/4"	3/4"	9.72	9.30	8.87	8.45
59185	.0730	#49	1.854	1-3/4"	3/4"	9.72	9.30	8.87	8.45
59190	.0760	#48	1.930	1-3/4"	3/4"	9.72	9.30	8.87	8.45
59195	.0781	5/64"	1.984	1-3/4"	3/4"	9.72	9.30	8.87	8.45
59200	.0785	#47	1.994	1-3/4"	7/8"	9.72	9.30	8.87	8.45
39000	.0787		2.000	50	22	9.72	9.30	8.87	8.45
59210	.0810	#46	2.057	2"	7/8"	9.72	9.30	8.87	8.45
59215	.0820	#45	2.083	2"	7/8"	9.72	9.30	8.87	8.45
59220	.0860	#44	2.184	2"	7/8"	9.72	9.30	8.87	8.45
59225	.0890	#43	2.261	2"	7/8"	9.72	9.30	8.87	8.45
59230	.0935	#42	2.375	2"	7/8"	9.72	9.30	8.87	8.45
59235	.0938	3/32"	2.383	2"	7/8"	9.72	9.30	8.87	8.45
59240	.0960	#41	2.438	2"	7/8"	11.07	10.59	10.11	9.63
59245	.0980	#40	2.489	2"	7/8"	11.07	10.59	10.11	9.63
39050	.0984		2.500	50	22	11.07	10.59	10.11	9.63
59255	.0995	#39	2.527	2"	7/8"	11.07	10.59	10.11	9.63
59260	.1015	#38	2.578	2"	7/8"	11.07	10.59	10.11	9.63
59265	.1040	#37	2.642	2"	7/8"	11.07	10.59	10.11	9.63
59270	.1065	#36	2.705	2"	7/8"	11.07	10.59	10.11	9.63
59275	.1094	7/64"	2.779	2"	1"	11.07	10.59	10.11	9.63
59280	.1100	#35	2.794	2"	1"	11.51	11.01	10.51	10.01
59285	.1110	#34	2.819	2"	1"	11.51	11.01	10.51	10.01
59290	.1130	#33	2.870	2"	1"	11.51	11.01	10.51	10.01
59295	.1160	#32	2.946	2"	1"	11.51	11.01	10.51	10.01
39100	.1181		3.000	50	25	11.51	11.01	10.51	10.01
59305	.1200	#31	3.048	2"	1"	11.51	11.01	10.51	10.01
59310	.1250	1/8"	3.175	2"	1"	10.61	10.15	9.69	9.23
59315	.1285	#30	3.264	2"	1"	12.52	11.98	11.43	10.89
59320	.1360	#29	3.454	2"	1"	12.52	11.98	11.43	10.89
39150	.1378		3.500	50	25	12.52	11.98	11.43	10.89
59330	.1405	#28	3.569	2"	1"	12.52	11.98	11.43	10.89
59335	.1406	9/64"	3.571	2"	1"	12.52	11.98	11.43	10.89
59340	.1440	#27	3.658	2"	1"	12.86	12.30	11.74	11.18
59345	.1470	#26	3.734	2"	1"	13.51	12.93	12.34	11.75
59350	.1495	#25	3.797	2"	1"	13.51	12.93	12.34	11.75
59355	.1520	#24	3.861	2"	1"	13.51	12.93	12.34	11.75
59360	.1540	#23	3.912	2"	1"	13.51	12.93	12.34	11.75
59365	.1562	5/32"	3.967	2-1/2"	1-1/8"	13.51	12.93	12.34	11.75
59370	.1570	#22	3.988	2-1/2"	1-1/8"	14.64	14.00	13.37	12.73
39200	.1575		4.000	63	28	14.64	14.00	13.37	12.73
59380	.1590	#21	4.039	2-1/2"	1-1/8"	14.98	14.33	13.68	13.03
59385	.1610	#20	4.089	2-1/2"	1-1/8"	14.98	14.33	13.68	13.03
59390	.1660	#19	4.216	2-1/2"	1-1/8"	15.54	14.86	14.19	13.51

continued →

## Series 1500 (continued)

.1695" - .5000"  
(4.305mm - 12.700mm)

EDP#	$d^{\dagger}$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
59395	.1695	#18	4.305	2-1/2"	1-3/16"	15.54	14.86	14.19	13.51
59400	.1719	11/64"	4.366	2-1/2"	1-3/16"	15.54	14.86	14.19	13.51
59405	.1730	#17	4.394	2-1/2"	1-3/16"	15.88	15.19	14.50	13.81
59410	.1770	#16	4.496	2-1/2"	1-3/16"	15.88	15.19	14.50	13.81
39250	.1772		4.500	63	28	15.88	15.19	14.50	13.81
59420	.1800	#15	4.572	2-1/2"	1-3/16"	15.88	15.19	14.50	13.81
59425	.1820	#14	4.623	2-1/2"	1-3/16"	16.77	16.04	15.31	14.58
59430	.1850	#13	4.700	2-1/2"	1-3/16"	16.77	16.04	15.31	14.58
59435	.1875	3/16"	4.763	2-1/2"	1-3/16"	16.11	15.41	14.71	14.01
59440	.1890	#12	4.801	2-1/2"	1-3/16"	16.65	15.93	15.20	14.48
59445	.1910	#11	4.851	2-1/2"	1-3/16"	16.65	15.93	15.20	14.48
59450	.1935	#10	4.915	2-1/2"	1-1/4"	17.64	16.87	16.11	15.34
59455	.1960	#9	4.978	2-1/2"	1-1/4"	17.64	16.87	16.11	15.34
39300	.1969		5.000	63	32	17.64	16.87	16.11	15.34
59465	.1990	#8	5.055	2-1/2"	1-1/4"	18.23	17.44	16.64	15.85
59470	.2010	#7	5.105	2-1/2"	1-1/4"	18.23	17.44	16.64	15.85
59475	.2031	13/64"	5.159	2-1/2"	1-1/4"	18.23	17.44	16.64	15.85
59480	.2040	#6	5.182	2-1/2"	1-1/4"	19.23	18.39	17.56	16.72
59485	.2055	#5	5.220	2-1/2"	1-1/4"	19.23	18.39	17.56	16.72
59490	.2090	#4	5.309	2-1/2"	1-1/4"	19.23	18.39	17.56	16.72
59495	.2130	#3	5.410	2-1/2"	1-1/4"	19.23	18.39	17.56	16.72
39350	.2165		5.500	63	32	19.23	18.39	17.56	16.72
59505	.2188	7/32"	5.558	2-1/2"	1-1/2"	19.23	18.39	17.56	16.72
59510	.2210	#2	5.613	2-1/2"	1-1/2"	20.57	19.68	18.78	17.89
59515	.2280	#1	5.791	2-1/2"	1-1/2"	20.57	19.68	18.78	17.89
59525	.2344	15/64"	5.954	2-1/2"	1-1/2"	22.92	21.92	20.93	19.93
39400	.2362		6.000	63	38	22.92	21.92	20.93	19.93
59550	.2500	1/4"	6.350	2-1/2"	1-1/2"	21.59	20.65	19.71	18.77
39450	.2559		6.500	63	38	26.16	25.03	23.89	22.75
59570	.2656	17/64"	6.746	2-1/2"	1-1/2"	26.16	25.03	23.89	22.75
39500	.2756		7.000	63	38	26.82	25.65	24.49	23.32
59600	.2812	9/32"	7.142	2-1/2"	1-1/2"	26.82	25.65	24.49	23.32
39520	.2953		7.500	63	41	28.18	26.95	25.73	24.50
59620	.2969	19/64"	7.541	2-1/2"	1-5/8"	28.18	26.95	25.73	24.50
59630	.3125	5/16"	7.938	2-1/2"	1-5/8"	28.18	26.95	25.73	24.50
39540	.3150		8.000	63	41	29.64	28.35	27.06	25.77
59650	.3281	21/64"	8.334	3"	1-5/8"	30.51	29.18	27.86	26.53
39560	.3346		8.500	76	41	34.09	32.60	31.12	29.64
59670	.3438	11/32"	8.733	3"	1-5/8"	34.09	32.60	31.12	29.64
39580	.3543		9.000	76	41	37.01	35.40	33.79	32.18
59690	.3594	23/64"	9.129	3"	1-3/4"	37.01	35.40	33.79	32.18
39600	.3740		9.500	76	41	40.35	38.60	36.84	35.09
59705	.3750	3/8"	9.525	3"	1-3/4"	40.35	38.60	36.84	35.09
59720	.3906	25/64"	9.921	3"	1-3/4"	45.60	43.62	41.63	39.65
39620	.3937		10.000	76	44	45.60	43.62	41.63	39.65
59740	.4062	13/32"	10.317	3"	1-3/4"	50.96	48.74	46.53	44.31
39640	.4134		10.500	76	44	53.33	51.01	48.69	46.37
59755	.4219	27/64"	10.716	3"	1-3/4"	56.11	53.67	51.23	48.79
39660	.4331		11.000	76	44	57.12	54.64	52.15	49.67
59765	.4375	7/16"	11.113	3"	1-3/4"	57.12	54.64	52.15	49.67
39680	.4528		11.500	76	44	58.78	56.22	53.67	51.11
59775	.4531	29/64"	11.509	3"	1-3/4"	59.89	57.29	54.68	52.08
59780	.4688	15/32"	11.908	3"	1-3/4"	59.89	57.29	54.68	52.08
39700	.4724		12.000	76	44	59.89	57.29	54.68	52.08
59790	.4844	31/64"	12.304	3"	1-3/4"	59.89	57.29	54.68	52.08
39720	.4921		12.500	76	44	61.25	58.59	55.92	53.26
59800	.5000	1/2"	12.700	3"	1-3/4"	61.25	58.59	55.92	53.26

**TOLERANCES**

<i>d</i>	+.0000" - .0005" (+.0000 - .0127mm)	
<i>l1</i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)
<i>l2</i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)



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**Series 1500H**

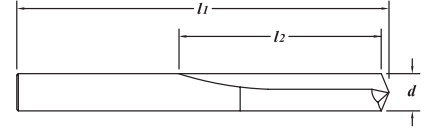
.0625" - .1660"  
(1.588mm - 4.216mm)

Recommended for high nickel, cobalt-based, and powdered metals

**Hard Metal**

**Hardlube Coating**

- Solid submicron grain carbide drill
- Straight flute design provides excellent rigidity
- Materials 40 Rc and higher
- Excellent heat resistance and lubricity
- Live tooling recommended on lathe processes
- Uncoated - page 53



EDP#	<i>d</i> <sup>†</sup> Diameter		<i>l1</i> Overall Length	<i>l2</i> Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
59166	.0625	1/16"	1.588	1-3/4"	5/8"	11.66	11.15	10.65	10.14
59181	.0700	#50	1.778	1-3/4"	3/4"	11.66	11.15	10.65	10.14
59186	.0730	#49	1.854	1-3/4"	3/4"	11.66	11.15	10.65	10.14
59191	.0760	#48	1.930	1-3/4"	3/4"	11.66	11.15	10.65	10.14
59196	.0781	5/64"	1.984	1-3/4"	3/4"	11.66	11.15	10.65	10.14
59201	.0785	#47	1.994	1-3/4"	7/8"	11.66	11.15	10.65	10.14
39001	.0787		2.000	50	22	11.66	11.15	10.65	10.14
59211	.0810	#46	2.057	2"	7/8"	11.66	11.15	10.65	10.14
59216	.0820	#45	2.083	2"	7/8"	11.66	11.15	10.65	10.14
59221	.0860	#44	2.184	2"	7/8"	11.66	11.15	10.65	10.14
59226	.0890	#43	2.261	2"	7/8"	11.66	11.15	10.65	10.14
59231	.0935	#42	2.375	2"	7/8"	11.66	11.15	10.65	10.14
59236	.0938	3/32"	2.383	2"	7/8"	11.66	11.15	10.65	10.14
59241	.0960	#41	2.438	2"	7/8"	12.98	12.42	11.85	11.29
59246	.0980	#40	2.489	2"	7/8"	12.98	12.42	11.85	11.29
39051	.0984		2.500	50	22	12.98	12.42	11.85	11.29
59256	.0995	#39	2.527	2"	7/8"	12.98	12.42	11.85	11.29
59261	.1015	#38	2.578	2"	7/8"	12.98	12.42	11.85	11.29
59266	.1040	#37	2.642	2"	7/8"	12.98	12.42	11.85	11.29
59271	.1065	#36	2.705	2"	7/8"	12.98	12.42	11.85	11.29
59276	.1094	7/64"	2.779	2"	1"	12.98	12.42	11.85	11.29
59281	.1100	#35	2.794	2"	1"	13.46	12.87	12.29	11.70
59286	.1110	#34	2.819	2"	1"	13.46	12.87	12.29	11.70
59291	.1130	#33	2.870	2"	1"	13.46	12.87	12.29	11.70
59296	.1160	#32	2.946	2"	1"	13.46	12.87	12.29	11.70
39101	.1181		3.000	50	25	13.46	12.87	12.29	11.70
59306	.1200	#31	3.048	2"	1"	13.46	12.87	12.29	11.70
59311	.1250	1/8"	3.175	2"	1"	12.54	11.99	11.45	10.90
59316	.1285	#30	3.264	2"	1"	14.44	13.82	13.19	12.56
59321	.1360	#29	3.454	2"	1"	14.44	13.82	13.19	12.56
39151	.1378		3.500	50	25	14.44	13.82	13.19	12.56
59331	.1405	#28	3.569	2"	1"	14.44	13.82	13.19	12.56
59336	.1406	9/64"	3.571	2"	1"	14.44	13.82	13.19	12.56
59341	.1440	#27	3.658	2"	1"	14.78	14.14	13.49	12.85
59346	.1470	#26	3.734	2"	1"	15.46	14.78	14.11	13.44
59351	.1495	#25	3.797	2"	1"	15.46	14.78	14.11	13.44
59356	.1520	#24	3.861	2"	1"	15.46	14.78	14.11	13.44
59361	.1540	#23	3.912	2"	1"	15.46	14.78	14.11	13.44
59366	.1562	5/32"	3.967	2-1/2"	1-1/8"	15.46	14.78	14.11	13.44
59371	.1570	#22	3.988	2-1/2"	1-1/8"	16.56	15.84	15.12	14.40
39201	.1575		4.000	63	28	16.56	15.84	15.12	14.40
59381	.1590	#21	4.039	2-1/2"	1-1/8"	16.91	16.17	15.44	14.70
59386	.1610	#20	4.089	2-1/2"	1-1/8"	16.91	16.17	15.44	14.70
59391	.1660	#19	4.216	2-1/2"	1-1/8"	17.47	16.71	15.95	15.19

continued →

## Series 1500H (continued)

.1695" - .5000"  
(4.305mm - 12.700mm)

EDP#	$d^{\dagger}$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
59396	.1695	#18	4.305	2-1/2"	1-3/16"	17.47	16.71	15.95	15.19
59401	.1719	11/64"	4.366	2-1/2"	1-3/16"	17.47	16.71	15.95	15.19
59406	.1730	#17	4.394	2-1/2"	1-3/16"	17.81	17.04	16.26	15.49
59411	.1770	#16	4.496	2-1/2"	1-3/16"	17.81	17.04	16.26	15.49
39251	.1772		4.500	63	28	17.81	17.04	16.26	15.49
59421	.1800	#15	4.572	2-1/2"	1-3/16"	17.81	17.04	16.26	15.49
59426	.1820	#14	4.623	2-1/2"	1-3/16"	18.68	17.86	17.05	16.24
59431	.1850	#13	4.700	2-1/2"	1-3/16"	18.68	17.86	17.05	16.24
59436	.1875	3/16"	4.763	2-1/2"	1-3/16"	18.02	17.24	16.45	15.67
59441	.1890	#12	4.801	2-1/2"	1-3/16"	19.94	19.07	18.21	17.34
59446	.1910	#11	4.851	2-1/2"	1-3/16"	19.94	19.07	18.21	17.34
59451	.1935	#10	4.915	2-1/2"	1-1/4"	20.95	20.04	19.13	18.22
59456	.1960	#9	4.978	2-1/2"	1-1/4"	20.95	20.04	19.13	18.22
39301	.1969		5.000	63	32	20.95	20.04	19.13	18.22
59466	.1990	#8	5.055	2-1/2"	1-1/4"	21.52	20.58	19.65	18.71
59471	.2010	#7	5.105	2-1/2"	1-1/4"	21.52	20.58	19.65	18.71
59476	.2031	13/64"	5.159	2-1/2"	1-1/4"	21.52	20.58	19.65	18.71
59481	.2040	#6	5.182	2-1/2"	1-1/4"	22.54	21.56	20.58	19.60
59486	.2055	#5	5.220	2-1/2"	1-1/4"	22.54	21.56	20.58	19.60
59491	.2090	#4	5.309	2-1/2"	1-1/4"	22.54	21.56	20.58	19.60
59496	.2130	#3	5.410	2-1/2"	1-1/4"	22.54	21.56	20.58	19.60
39351	.2165		5.500	63	32	22.54	21.56	20.58	19.60
59506	.2188	7/32"	5.558	2-1/2"	1-1/2"	22.54	21.56	20.58	19.60
59511	.2210	#2	5.613	2-1/2"	1-1/2"	23.89	22.85	21.81	20.77
59516	.2280	#1	5.791	2-1/2"	1-1/2"	23.89	22.85	21.81	20.77
59526	.2344	15/64"	5.954	2-1/2"	1-1/2"	26.21	25.07	23.93	22.79
39401	.2362		6.000	63	38	26.21	25.07	23.93	22.79
59551	.2500	1/4"	6.350	2-1/2"	1-1/2"	24.87	23.79	22.71	21.63
39451	.2559		6.500	63	38	32.04	30.65	29.25	27.86
59571	.2656	17/64"	6.746	2-1/2"	1-1/2"	32.04	30.65	29.25	27.86
39501	.2756		7.000	63	38	34.65	33.14	31.64	30.13
59601	.2812	9/32"	7.142	2-1/2"	1-1/2"	34.65	33.14	31.64	30.13
39521	.2953		7.500	63	41	34.05	32.57	31.09	29.61
59621	.2969	19/64"	7.541	2-1/2"	1-5/8"	34.05	32.57	31.09	29.61
59631	.3125	5/16"	7.938	2-1/2"	1-5/8"	34.05	32.57	31.09	29.61
39541	.3150		8.000	63	41	35.52	33.98	32.43	30.89
59651	.3281	21/64"	8.334	3"	1-5/8"	36.39	34.80	33.22	31.64
39561	.3346		8.500	76	41	39.96	38.23	36.49	34.75
59671	.3438	11/32"	8.733	3"	1-5/8"	39.96	38.23	36.49	34.75
39581	.3543		9.000	76	41	43.25	41.37	39.49	37.61
59691	.3594	23/64"	9.129	3"	1-3/4"	43.25	41.37	39.49	37.61
39601	.3740		9.500	76	41	46.62	44.59	42.57	40.54
59706	.3750	3/8"	9.525	3"	1-3/4"	46.62	44.59	42.57	40.54
59721	.3906	25/64"	9.921	3"	1-3/4"	52.37	50.09	47.82	45.54
39621	.3937		10.000	76	44	52.37	50.09	47.82	45.54
59741	.4062	13/32"	10.317	3"	1-3/4"	61.20	58.54	55.88	53.22
39641	.4134		10.500	76	44	60.11	57.50	54.88	52.27
59756	.4219	27/64"	10.716	3"	1-3/4"	62.92	60.18	57.45	54.71
39661	.4331		11.000	76	44	63.91	61.13	58.35	55.57
59766	.4375	7/16"	11.113	3"	1-3/4"	63.91	61.13	58.35	55.57
39681	.4528		11.500	76	44	65.56	62.71	59.86	57.01
59776	.4531	29/64"	11.509	3"	1-3/4"	66.68	63.78	60.88	57.98
59781	.4688	15/32"	11.908	3"	1-3/4"	66.68	63.78	60.88	57.98
39701	.4724		12.000	76	44	66.68	63.78	60.88	57.98
59791	.4844	31/64"	12.304	3"	1-3/4"	66.68	63.78	60.88	57.98
39721	.4921		12.500	76	44	68.01	65.05	62.10	59.14
59801	.5000	1/2"	12.700	3"	1-3/4"	68.01	65.05	62.10	59.14

**TOLERANCES**

<i>d</i>	+.0000" - .0005" (+.0000 - .0127mm)	
<i>l1</i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)
<i>l2</i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)



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282-285

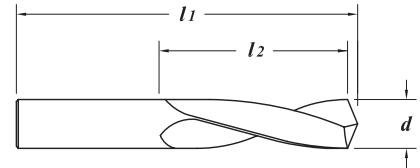
**Series 1510**

.0625" - .1575"  
(1.588mm - 4.000mm)

Recommended for titanium, inconel, hastalloy, waspalloy, and stainless steel

**Slow Helix**

- Solid submicron grain carbide drill
- Heavy web for extra rigidity and added strength
- Thinned point
- Live tooling recommended on lathe processes
- Hardlube Coating - page 60



EDP#	<i>d</i> † Diameter		<i>l1</i> Overall Length	<i>l2</i> Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
19070	.0625	1/16"	1.588	1-3/4"	5/8"	7.15	6.84	6.53	6.22
19075	.0635	#52	1.613	1-3/4"	11/16"	7.26	6.94	6.63	6.31
19080	.0670	#51	1.702	1-3/4"	11/16"	7.37	7.05	6.73	6.41
19085	.0700	#50	1.778	1-3/4"	11/16"	7.56	7.23	6.90	6.57
19090	.0730	#49	1.854	1-3/4"	11/16"	7.73	7.39	7.06	6.72
19095	.0760	#48	1.930	1-3/4"	11/16"	7.99	7.65	7.30	6.95
19100	.0781	5/64"	1.984	1-3/4"	11/16"	8.29	7.93	7.57	7.21
19105	.0785	#47	1.994	1-3/4"	3/4"	8.57	8.20	7.82	7.45
19115	.0787		2.000	45	19	8.71	8.33	7.95	7.57
19120	.0810	#46	2.057	1-3/4"	3/4"	8.84	8.46	8.07	7.69
19125	.0820	#45	2.083	1-3/4"	3/4"	9.10	8.70	8.31	7.91
19130	.0860	#44	2.184	1-3/4"	3/4"	9.41	9.00	8.59	8.18
19135	.0890	#43	2.261	1-3/4"	3/4"	9.68	9.26	8.84	8.42
19140	.0935	#42	2.375	1-3/4"	3/4"	9.81	9.38	8.96	8.53
19145	.0938	3/32"	2.383	1-3/4"	3/4"	10.04	9.60	9.17	8.73
19150	.0960	#41	2.438	1-13/16"	13/16"	10.12	9.68	9.24	8.80
19155	.0980	#40	2.489	1-13/16"	13/16"	10.26	9.81	9.37	8.92
19160	.0984		2.500	46	21	10.33	9.88	9.43	8.98
19165	.0995	#39	2.527	1-13/16"	13/16"	10.37	9.92	9.47	9.02
19170	.1015	#38	2.578	1-13/16"	13/16"	10.47	10.01	9.56	9.10
19175	.1040	#37	2.642	1-13/16"	13/16"	10.56	10.10	9.64	9.18
19180	.1065	#36	2.705	1-13/16"	13/16"	10.64	10.18	9.71	9.25
19185	.1094	7/64"	2.779	1-13/16"	13/16"	10.68	10.22	9.75	9.29
19190	.1100	#35	2.794	1-7/8"	7/8"	10.75	10.29	9.82	9.35
19195	.1110	#34	2.819	1-7/8"	7/8"	10.88	10.41	9.93	9.46
19200	.1130	#33	2.870	1-7/8"	7/8"	10.96	10.48	10.01	9.53
19205	.1160	#32	2.946	1-7/8"	7/8"	11.04	10.56	10.08	9.60
19210	.1181		3.000	48	22	11.14	10.66	10.17	9.69
19215	.1200	#31	3.048	1-7/8"	7/8"	11.26	10.77	10.28	9.79
19220	.1250	1/8"	3.175	1-7/8"	7/8"	11.37	10.88	10.38	9.89
19225	.1285	#30	3.264	1-15/16"	15/16"	11.67	11.17	10.66	10.15
19230	.1360	#29	3.454	1-15/16"	15/16"	11.98	11.46	10.94	10.42
19235	.1378		3.500	49	24	12.36	11.83	11.29	10.75
19240	.1405	#28	3.569	1-15/16"	15/16"	12.52	11.98	11.43	10.89
19245	.1406	9/64"	3.571	1-15/16"	15/16"	12.66	12.11	11.56	11.01
19250	.1440	#27	3.658	2-1/16"	1"	13.78	13.18	12.58	11.98
19255	.1470	#26	3.734	2-1/16"	1"	13.92	13.31	12.71	12.10
19260	.1495	#25	3.797	2-1/16"	1"	14.10	13.49	12.87	12.26
19265	.1520	#24	3.861	2-1/16"	1"	14.12	13.51	12.89	12.28
19270	.1540	#23	3.912	2-1/16"	1"	14.21	13.60	12.98	12.36
19275	.1562	5/32"	3.967	2-1/16"	1"	14.31	13.68	13.06	12.44
19280	.1570	#22	3.988	2-1/8"	1-1/16"	15.19	14.53	13.87	13.21
19285	.1575		4.000	54	27	15.40	14.73	14.06	13.39

continued →

# Series 1510 (continued)

.1590" - .3346"  
(4.039mm - 8.500mm)

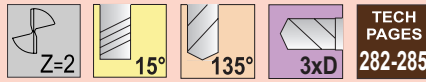
DRILLS

EDP#	$d^{\dagger}$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
19290	.1590	#21	4.039	2-1/8"	1-1/16"	15.58	14.91	14.23	13.55
19295	.1610	#20	4.089	2-1/8"	1-1/16"	15.71	15.03	14.34	13.66
19300	.1660	#19	4.216	2-1/8"	1-1/16"	16.34	15.63	14.92	14.21
19305	.1695	#18	4.305	2-1/8"	1-1/16"	16.54	15.82	15.10	14.38
19310	.1719	11/64"	4.366	2-1/8"	1-1/16"	16.86	16.13	15.39	14.66
19315	.1730	#17	4.394	2-3/16"	1-1/8"	17.11	16.37	15.62	14.88
19320	.1770	#16	4.496	2-3/16"	1-1/8"	17.30	16.54	15.79	15.04
19325	.1772		4.500	56	29	17.39	16.63	15.88	15.12
19330	.1800	#15	4.572	2-3/16"	1-1/8"	17.47	16.71	15.95	15.19
19335	.1820	#14	4.623	2-3/16"	1-1/8"	17.86	17.08	16.31	15.53
19340	.1850	#13	4.700	2-3/16"	1-1/8"	18.00	17.22	16.43	15.65
19345	.1875	3/16"	4.763	2-3/16"	1-1/8"	18.07	17.28	16.50	15.71
19350	.1890	#12	4.801	2-1/4"	1-3/16"	18.66	17.85	17.04	16.23
19355	.1910	#11	4.851	2-1/4"	1-3/16"	18.88	18.06	17.24	16.42
19360	.1935	#10	4.915	2-1/4"	1-3/16"	19.75	18.89	18.03	17.17
19365	.1960	#9	4.978	2-1/4"	1-3/16"	20.26	19.38	18.50	17.62
19370	.1969		5.000	57	30	20.37	19.48	18.60	17.71
19375	.1990	#8	5.055	2-1/4"	1-3/16"	20.53	19.64	18.74	17.85
19380	.2010	#7	5.105	2-1/4"	1-3/16"	21.13	20.21	19.29	18.37
19385	.2031	13/64"	5.159	2-1/4"	1-3/16"	21.28	20.35	19.43	18.50
19390	.2040	#6	5.182	2-3/8"	1-1/4"	21.71	20.77	19.82	18.88
19395	.2055	#5	5.220	2-3/8"	1-1/4"	22.15	21.19	20.22	19.26
19400	.2090	#4	5.309	2-3/8"	1-1/4"	22.56	21.58	20.60	19.62
19405	.2130	#3	5.410	2-3/8"	1-1/4"	22.95	21.96	20.96	19.96
19410	.2165		5.500	60	32	23.12	22.11	21.11	20.10
19415	.2188	7/32"	5.558	2-3/8"	1-1/4"	23.30	22.29	21.27	20.26
19420	.2210	#2	5.613	2-7/16"	1-5/16"	23.84	22.80	21.77	20.73
19425	.2280	#1	5.791	2-7/16"	1-5/16"	24.01	22.97	21.92	20.88
19430	.2340	A	5.944	2-7/16"	1-5/16"	24.06	23.01	21.97	20.92
19435	.2344	15/64"	5.954	2-7/16"	1-5/16"	24.10	23.06	22.01	20.96
19440	.2362		6.000	64	35	24.17	23.12	22.07	21.02
19445	.2380	B	6.045	2-1/2"	1-3/8"	24.28	23.22	22.17	21.11
19450	.2420	C	6.147	2-1/2"	1-3/8"	24.45	23.39	22.32	21.26
19455	.2460	D	6.248	2-1/2"	1-3/8"	24.66	23.58	22.51	21.44
19460	.2500	1/4" / E	6.350	2-1/2"	1-3/8"	24.79	23.72	22.64	21.56
19465	.2559		6.500	67	37	25.40	24.30	23.19	22.09
19470	.2570	F	6.528	2-5/8"	1-7/16"	25.93	24.81	23.68	22.55
19475	.2610	G	6.629	2-5/8"	1-7/16"	26.46	25.31	24.16	23.01
19480	.2656	17/64"	6.746	2-5/8"	1-7/16"	27.00	25.83	24.65	23.48
19485	.2660	H	6.756	2-11/16"	1-1/2"	27.77	26.57	25.36	24.15
19490	.2720	I	6.909	2-11/16"	1-1/2"	28.09	26.87	25.65	24.43
19495	.2756		7.000	68	38	28.32	27.09	25.86	24.63
19500	.2770	J	7.036	2-11/16"	1-1/2"	28.58	27.34	26.09	24.85
19505	.2810	K	7.137	2-11/16"	1-1/2"	28.83	27.58	26.32	25.07
19510	.2812	9/32"	7.142	2-11/16"	1-1/2"	28.98	27.72	26.46	25.20
19515	.2900	L	7.366	2-3/4"	1-9/16"	30.05	28.74	27.44	26.13
19520	.2950	M	7.493	2-3/4"	1-9/16"	32.17	30.77	29.37	27.97
19525	.2953		7.500	70	40	32.17	30.77	29.37	27.97
19530	.2969	19/64"	7.541	2-3/4"	1-9/16"	32.34	30.93	29.53	28.12
19535	.3020	N	7.671	2-15/16"	1-5/8"	34.06	32.58	31.10	29.62
19540	.3125	5/16"	7.938	2-15/16"	1-5/8"	34.19	32.70	31.22	29.73
19545	.3150		8.000	75	43	36.69	35.09	33.50	31.90
19550	.3160	O	8.026	2-15/16"	1-11/16"	36.69	35.09	33.50	31.90
19555	.3230	P	8.204	2-15/16"	1-11/16"	37.01	35.40	33.79	32.18
19560	.3281	21/64"	8.334	2-15/16"	1-11/16"	37.23	35.61	33.99	32.37
19565	.3320	Q	8.433	3"	1-11/16"	38.09	36.43	34.78	33.12
19570	.3346		8.500	76	43	38.46	36.78	35.11	33.44

EDP#	$d^+$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
19575	.3390	R	8.611	3"	1-11/16"	39.65	37.93	36.20	34.48
19580	.3438	11/32"	8.733	3"	1-11/16"	41.26	39.47	37.67	35.88
19585	.3480	S	8.839	3-1/16"	1-3/4"	41.83	40.01	38.19	36.37
19590	.3543		9.000	78	44	42.08	40.25	38.42	36.59
19595	.3580	T	9.093	3-1/16"	1-3/4"	42.24	40.40	38.57	36.73
19600	.3594	23/64"	9.129	3-1/16"	1-3/4"	42.53	40.68	38.83	36.98
19605	.3680	U	9.347	3-1/8"	1-13/16"	46.58	44.55	42.53	40.50
19610	.3740		9.500	79	46	47.02	44.98	42.93	40.89
19615	.3750	3/8"	9.525	3-1/8"	1-13/16"	47.38	45.32	43.26	41.20
19620	.3770	V	9.576	3-1/4"	1-7/8"	48.30	46.20	44.10	42.00
19625	.3860	W	9.804	3-1/4"	1-7/8"	49.31	47.17	45.02	42.88
19630	.3906	25/64"	9.921	3-1/4"	1-7/8"	50.06	47.88	45.71	43.53
19635	.3937		10.000	84	49	51.85	49.60	47.34	45.09
19640	.3970	X	10.084	3-5/16"	1-15/16"	53.36	51.04	48.72	46.40
19645	.4040	Y	10.262	3-5/16"	1-15/16"	53.79	51.45	49.11	46.77
19650	.4062	13/32"	10.317	3-5/16"	1-15/16"	55.74	53.32	50.89	48.47
19655	.4130	Z	10.490	3-3/8"	2"	56.34	53.89	51.44	48.99
19660	.4134		10.500	86	51	56.34	53.89	51.44	48.99
19665	.4219	27/64"	10.716	3-3/8"	2"	56.96	54.48	52.01	49.53
19670	.4331		11.000	87	52	61.87	59.18	56.49	53.80
19675	.4375	7/16"	11.113	3-7/16"	2-1/16"	61.87	59.18	56.49	53.80
19680	.4528		11.500	91	54	67.09	64.17	61.26	58.34
19685	.4531	29/64"	11.509	3-9/16"	2-1/8"	67.09	64.17	61.26	58.34
19690	.4688	15/32"	11.908	3-5/8"	2-1/8"	70.97	67.88	64.80	61.71
19695	.4724		12.000	94	56	71.22	68.12	65.03	61.93
19700	.4844	31/64"	12.304	3-11/16"	2-3/16"	71.78	68.66	65.54	62.42
19705	.4921		12.500	95	56	72.58	69.42	66.27	63.11
19710	.5000	1/2"	12.700	3-3/4"	2-1/4"	73.11	69.93	66.75	63.57
19715	.5118		13.000	107	60	95.68	91.52	87.36	83.20
19720	.5156	33/64"	13.096	4-1/4"	2-3/8"	98.24	93.97	89.70	85.43
19725	.5312	17/32"	13.492	4-1/4"	2-3/8"	100.80	96.42	92.03	87.65
19730	.5315		13.500	107	60	103.39	98.89	94.40	89.90
19735	.5469	35/64"	13.891	4-1/4"	2-3/8"	105.94	101.33	96.73	92.12
19740	.5512		14.000	107	60	108.53	103.81	99.09	94.37
19745	.5625	9/16"	14.287	4-1/2"	2-1/2"	118.34	113.19	108.05	102.90
19750	.5709		14.500	115	65	120.80	115.54	110.29	105.04
19755	.5781	37/64"	14.683	4-1/2"	2-1/2"	123.28	117.92	112.56	107.20
19760	.5906		15.000	115	65	125.79	120.32	114.85	109.38
19765	.5938	19/32"	15.082	4-1/2"	2-1/2"	126.51	121.01	115.51	110.01
19770	.6094	39/64"	15.478	4-1/2"	2-1/2"	127.21	121.68	116.15	110.62
19775	.6102		15.500	115	65	127.94	122.38	116.81	111.25
19780	.6250	5/8"	15.875	4-1/2"	2-1/2"	128.65	123.06	117.46	111.87
19785	.6299		16.000	115	65	132.08	126.34	120.59	114.85

# Series 1510H

.0625" - .1575"  
(1.588mm - 4.000mm)



### TOLERANCES

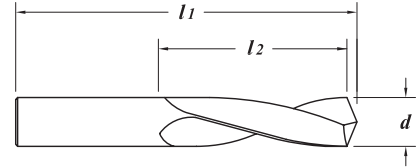
<i>d</i>	+.0000" - .0005" (+.0000 - .0127mm)	
<i>l<sub>1</sub></i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)
<i>l<sub>2</sub></i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)

Recommended for titanium, inconel, hastalloy, waspalloy, and stainless steel

## Slow Helix

### Hardlube Coating

- Solid submicron grain carbide drill
- Excellent heat resistance and lubricity
- Heavy web for extra rigidity and added strength
- Thinned point
- Live tooling recommended on lathe processes
- Uncoated - page 57



EDP#	<i>d</i> † Diameter		<i>l<sub>1</sub></i> Overall Length	<i>l<sub>2</sub></i> Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
19071	.0625	1/16"	1.588	1-3/4"	5/8"	9.06	8.67	8.27	7.88
19076	.0635	#52	1.613	1-3/4"	11/16"	9.18	8.78	8.38	7.98
19081	.0670	#51	1.702	1-3/4"	11/16"	9.28	8.88	8.47	8.07
19086	.0700	#50	1.778	1-3/4"	11/16"	9.46	9.05	8.64	8.23
19091	.0730	#49	1.854	1-3/4"	11/16"	9.66	9.24	8.82	8.40
19096	.0760	#48	1.930	1-3/4"	11/16"	9.90	9.47	9.04	8.61
19101	.0781	5/64"	1.984	1-3/4"	11/16"	10.21	9.77	9.32	8.88
19106	.0785	#47	1.994	1-3/4"	3/4"	10.48	10.02	9.57	9.11
19116	.0787		2.000	45	19	10.61	10.15	9.69	9.23
19121	.0810	#46	2.057	1-3/4"	3/4"	10.75	10.29	9.82	9.35
19126	.0820	#45	2.083	1-3/4"	3/4"	11.03	10.55	10.07	9.59
19131	.0860	#44	2.184	1-3/4"	3/4"	11.32	10.82	10.33	9.84
19136	.0890	#43	2.261	1-3/4"	3/4"	11.60	11.10	10.59	10.09
19141	.0935	#42	2.375	1-3/4"	3/4"	11.72	11.21	10.70	10.19
19146	.0938	3/32"	2.383	1-3/4"	3/4"	11.96	11.44	10.92	10.40
19151	.0960	#41	2.438	1-13/16"	13/16"	12.04	11.52	10.99	10.47
19156	.0980	#40	2.489	1-13/16"	13/16"	12.18	11.65	11.12	10.59
19161	.0984		2.500	46	21	12.25	11.72	11.18	10.65
19166	.0995	#39	2.527	1-13/16"	13/16"	12.31	11.77	11.24	10.70
19171	.1015	#38	2.578	1-13/16"	13/16"	12.37	11.84	11.30	10.76
19176	.1040	#37	2.642	1-13/16"	13/16"	12.45	11.91	11.37	10.83
19181	.1065	#36	2.705	1-13/16"	13/16"	12.54	11.99	11.45	10.90
19186	.1094	7/64"	2.779	1-13/16"	13/16"	12.62	12.07	11.52	10.97
19191	.1100	#35	2.794	1-7/8"	7/8"	12.67	12.12	11.57	11.02
19196	.1110	#34	2.819	1-7/8"	7/8"	12.79	12.23	11.68	11.12
19201	.1130	#33	2.870	1-7/8"	7/8"	12.87	12.31	11.75	11.19
19206	.1160	#32	2.946	1-7/8"	7/8"	12.96	12.40	11.83	11.27
19211	.1181		3.000	48	22	13.06	12.50	11.93	11.36
19216	.1200	#31	3.048	1-7/8"	7/8"	13.16	12.58	12.01	11.44
19221	.1250	1/8"	3.175	1-7/8"	7/8"	13.29	12.72	12.14	11.56
19226	.1285	#30	3.264	1-15/16"	15/16"	13.59	13.00	12.41	11.82
19231	.1360	#29	3.454	1-15/16"	15/16"	13.89	13.29	12.68	12.08
19236	.1378		3.500	49	24	14.28	13.66	13.04	12.42
19241	.1405	#28	3.569	1-15/16"	15/16"	14.44	13.82	13.19	12.56
19246	.1406	9/64"	3.571	1-15/16"	15/16"	14.56	13.93	13.29	12.66
19251	.1440	#27	3.658	2-1/16"	1"	15.70	15.02	14.33	13.65
19256	.1470	#26	3.734	2-1/16"	1"	15.84	15.15	14.46	13.77
19261	.1495	#25	3.797	2-1/16"	1"	16.02	15.32	14.63	13.93
19266	.1520	#24	3.861	2-1/16"	1"	16.04	15.35	14.65	13.95
19271	.1540	#23	3.912	2-1/16"	1"	16.13	15.43	14.73	14.03
19276	.1562	5/32"	3.967	2-1/16"	1"	16.22	15.51	14.81	14.10
19281	.1570	#22	3.988	2-1/8"	1-1/16"	17.11	16.37	15.62	14.88
19286	.1575		4.000	54	27	17.30	16.54	15.79	15.04

EDP#	$d^+$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
19291	.1590	#21	4.039	2-1/8"	1-1/16"	17.49	16.73	15.97	15.21
19296	.1610	#20	4.089	2-1/8"	1-1/16"	17.62	16.85	16.09	15.32
19301	.1660	#19	4.216	2-1/8"	1-1/16"	18.25	17.46	16.66	15.87
19306	.1695	#18	4.305	2-1/8"	1-1/16"	18.45	17.64	16.84	16.04
19311	.1719	11/64"	4.366	2-1/8"	1-1/16"	18.78	17.96	17.15	16.33
19316	.1730	#17	4.394	2-3/16"	1-1/8"	19.02	18.19	17.37	16.54
19321	.1770	#16	4.496	2-3/16"	1-1/8"	19.22	18.38	17.55	16.71
19326	.1772		4.500	56	29	19.30	18.46	17.62	16.78
19331	.1800	#15	4.572	2-3/16"	1-1/8"	19.38	18.54	17.69	16.85
19336	.1820	#14	4.623	2-3/16"	1-1/8"	19.78	18.92	18.06	17.20
19341	.1850	#13	4.700	2-3/16"	1-1/8"	19.92	19.05	18.19	17.32
19346	.1875	3/16"	4.763	2-3/16"	1-1/8"	19.98	19.11	18.24	17.37
19351	.1890	#12	4.801	2-1/4"	1-3/16"	21.97	21.01	20.06	19.10
19356	.1910	#11	4.851	2-1/4"	1-3/16"	22.20	21.23	20.27	19.30
19361	.1935	#10	4.915	2-1/4"	1-3/16"	23.07	22.07	21.06	20.06
19366	.1960	#9	4.978	2-1/4"	1-3/16"	23.58	22.55	21.53	20.50
19371	.1969		5.000	57	30	23.69	22.66	21.63	20.60
19376	.1990	#8	5.055	2-1/4"	1-3/16"	23.82	22.78	21.75	20.71
19381	.2010	#7	5.105	2-1/4"	1-3/16"	24.44	23.38	22.31	21.25
19386	.2031	13/64"	5.159	2-1/4"	1-3/16"	24.58	23.51	22.44	21.37
19391	.2040	#6	5.182	2-3/8"	1-1/4"	25.02	23.94	22.85	21.76
19396	.2055	#5	5.220	2-3/8"	1-1/4"	25.47	24.37	23.26	22.15
19401	.2090	#4	5.309	2-3/8"	1-1/4"	25.85	24.73	23.60	22.48
19406	.2130	#3	5.410	2-3/8"	1-1/4"	26.25	25.11	23.97	22.83
19411	.2165		5.500	60	32	26.44	25.29	24.14	22.99
19416	.2188	7/32"	5.558	2-3/8"	1-1/4"	26.60	25.44	24.29	23.13
19421	.2210	#2	5.613	2-7/16"	1-5/16"	27.16	25.98	24.80	23.62
19426	.2280	#1	5.791	2-7/16"	1-5/16"	27.31	26.13	24.94	23.75
19431	.2340	A	5.944	2-7/16"	1-5/16"	27.38	26.19	25.00	23.81
19436	.2344	15/64"	5.954	2-7/16"	1-5/16"	27.42	26.22	25.03	23.84
19441	.2362		6.000	64	35	27.50	26.30	25.11	23.91
19446	.2380	B	6.045	2-1/2"	1-3/8"	27.59	26.39	25.19	23.99
19451	.2420	C	6.147	2-1/2"	1-3/8"	27.76	26.55	25.35	24.14
19456	.2460	D	6.248	2-1/2"	1-3/8"	27.95	26.73	25.52	24.30
19461	.2500	1/4" / E	6.350	2-1/2"	1-3/8"	28.12	26.90	25.67	24.45
19466	.2559		6.500	67	37	31.28	29.92	28.56	27.20
19471	.2570	F	6.528	2-5/8"	1-7/16"	31.82	30.44	29.05	27.67
19476	.2610	G	6.629	2-5/8"	1-7/16"	32.34	30.93	29.53	28.12
19481	.2656	17/64"	6.746	2-5/8"	1-7/16"	32.88	31.45	30.02	28.59
19486	.2660	H	6.756	2-11/16"	1-1/2"	33.65	32.19	30.72	29.26
19491	.2720	I	6.909	2-11/16"	1-1/2"	33.96	32.48	31.01	29.53
19496	.2756		7.000	68	38	34.19	32.70	31.22	29.73
19501	.2770	J	7.036	2-11/16"	1-1/2"	34.45	32.96	31.46	29.96
19506	.2810	K	7.137	2-11/16"	1-1/2"	34.71	33.20	31.69	30.18
19511	.2812	9/32"	7.142	2-11/16"	1-1/2"	34.83	33.32	31.80	30.29
19516	.2900	L	7.366	2-3/4"	1-9/16"	35.91	34.35	32.79	31.23
19521	.2950	M	7.493	2-3/4"	1-9/16"	38.03	36.38	34.72	33.07
19526	.2953		7.500	70	40	38.03	36.38	34.72	33.07
19531	.2969	19/64"	7.541	2-3/4"	1-9/16"	38.19	36.53	34.87	33.21
19536	.3020	N	7.671	2-15/16"	1-5/8"	39.94	38.20	36.47	34.73
19541	.3125	5/16"	7.938	2-15/16"	1-5/8"	40.08	38.34	36.59	34.85
19546	.3150		8.000	75	43	42.56	40.71	38.86	37.01
19551	.3160	O	8.026	2-15/16"	1-11/16"	42.56	40.71	38.86	37.01
19556	.3230	P	8.204	2-15/16"	1-11/16"	42.87	41.01	39.14	37.28
19561	.3281	21/64"	8.334	2-15/16"	1-11/16"	43.10	41.23	39.35	37.48
19566	.3320	Q	8.433	3"	1-11/16"	43.96	42.05	40.14	38.23
19571	.3346		8.500	76	43	44.32	42.39	40.47	38.54

continued →

Series 1510H (continued)

.3390" - .6299"  
(8.611mm - 16.000mm)

EDP#	$d^{\dagger}$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
19576	.3390	R	8.611	3"	1-11/16"	45.52	43.54	41.56	39.58
19581	.3438	11/32"	8.733	3"	1-11/16"	47.14	45.09	43.04	40.99
19586	.3480	S	8.839	3-1/16"	1-3/4"	49.78	47.62	45.45	43.29
19591	.3543		9.000	78	44	50.06	47.88	45.71	43.53
19596	.3580	T	9.093	3-1/16"	1-3/4"	50.19	48.00	45.82	43.64
19601	.3594	23/64"	9.129	3-1/16"	1-3/4"	50.50	48.30	46.11	43.91
19606	.3680	U	9.347	3-1/8"	1-13/16"	54.54	52.17	49.80	47.43
19611	.3740		9.500	79	46	54.98	52.59	50.20	47.81
19616	.3750	3/8"	9.525	3-1/8"	1-13/16"	55.35	52.94	50.54	48.13
19621	.3770	V	9.576	3-1/4"	1-7/8"	57.42	54.92	52.43	49.93
19626	.3860	W	9.804	3-1/4"	1-7/8"	58.43	55.89	53.35	50.81
19631	.3906	25/64"	9.921	3-1/4"	1-7/8"	59.16	56.58	54.01	51.44
19636	.3937		10.000	84	49	60.95	58.30	55.65	53.00
19641	.3970	X	10.084	3-5/16"	1-15/16"	62.49	59.77	57.06	54.34
19646	.4040	Y	10.262	3-5/16"	1-15/16"	62.92	60.18	57.45	54.71
19651	.4062	13/32"	10.317	3-5/16"	1-15/16"	64.84	62.02	59.20	56.38
19656	.4130	Z	10.490	3-3/8"	2"	65.45	62.60	59.76	56.91
19661	.4134		10.500	86	51	65.45	62.60	59.76	56.91
19666	.4219	27/64"	10.716	3-3/8"	2"	66.07	63.20	60.32	57.45
19671	.4331		11.000	87	52	70.97	67.88	64.80	61.71
19676	.4375	7/16"	11.113	3-7/16"	2-1/16"	70.97	67.88	64.80	61.71
19681	.4528		11.500	91	54	76.21	72.90	69.58	66.27
19686	.4531	29/64"	11.509	3-9/16"	2-1/8"	76.21	72.90	69.58	66.27
19691	.4688	15/32"	11.908	3-5/8"	2-1/8"	80.07	76.59	73.11	69.63
19696	.4724		12.000	94	56	80.34	76.85	73.35	69.86
19701	.4844	31/64"	12.304	3-11/16"	2-3/16"	80.88	77.36	73.85	70.33
19706	.4921		12.500	95	56	81.71	78.16	74.60	71.05
19711	.5000	1/2"	12.700	3-3/4"	2-1/4"	82.23	78.65	75.08	71.50
19716	.5118		13.000	107	60	108.89	104.16	99.42	94.69
19721	.5156	33/64"	13.096	4-1/4"	2-3/8"	111.45	106.60	101.76	96.91
19726	.5312	17/32"	13.492	4-1/4"	2-3/8"	114.01	109.05	104.10	99.14
19731	.5315		13.500	107	60	116.58	111.51	106.44	101.37
19736	.5469	35/64"	13.891	4-1/4"	2-3/8"	119.13	113.95	108.77	103.59
19741	.5512		14.000	107	60	121.73	116.44	111.14	105.85
19746	.5625	9/16"	14.287	4-1/2"	2-1/2"	131.55	125.83	120.11	114.39
19751	.5709		14.500	115	65	134.01	128.18	122.36	116.53
19756	.5781	37/64"	14.683	4-1/2"	2-1/2"	136.48	130.55	124.61	118.68
19761	.5906		15.000	115	65	138.98	132.94	126.89	120.85
19766	.5938	19/32"	15.082	4-1/2"	2-1/2"	139.71	133.64	127.56	121.49
19771	.6094	39/64"	15.478	4-1/2"	2-1/2"	140.42	134.31	128.21	122.10
19776	.6102		15.500	115	65	141.14	135.00	128.87	122.73
19781	.6250	5/8"	15.875	4-1/2"	2-1/2"	141.86	135.70	129.53	123.36
19786	.6299		16.000	115	65	145.29	138.97	132.66	126.34

**TOLERANCES**

<i>d</i>	+.0000" - .0005" (+.0000 - .0127mm)	
<i>l1</i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)
<i>l2</i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)



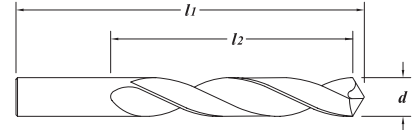
**TECH  
PAGES  
282-285**

**Series 1520**

.0625" - .1575"  
(1.588mm - 4.000mm)

General purpose for all material groups

- Solid submicron grain carbide drill
- No spotting required in most applications
- 4-facet self-centering point
- Live tooling recommended on lathe processes
- Hardlube Coating - page 66



**DRILLS**

EDP#	<i>d</i> † Diameter		<i>l1</i> Overall Length	<i>l2</i> Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
77165	.0625	1/16"	1.588	1-3/4"	5/8"	6.79	6.49	6.20	5.90
77170	.0635	#52	1.613	1-3/4"	11/16"	6.89	6.59	6.29	5.99
77175	.0670	#51	1.702	1-3/4"	11/16"	6.99	6.69	6.38	6.08
77180	.0700	#50	1.778	1-3/4"	11/16"	7.16	6.85	6.54	6.23
77185	.0730	#49	1.854	1-3/4"	11/16"	7.35	7.03	6.71	6.39
77190	.0760	#48	1.930	1-3/4"	11/16"	7.59	7.26	6.93	6.60
77195	.0781	5/64"	1.984	1-3/4"	11/16"	7.88	7.54	7.19	6.85
77200	.0785	#47	1.994	1-3/4"	3/4"	8.14	7.79	7.43	7.08
77205	.0787		2.000	45	19	8.27	7.91	7.55	7.19
77210	.0810	#46	2.057	1-3/4"	3/4"	8.40	8.03	7.67	7.30
77215	.0820	#45	2.083	1-3/4"	3/4"	8.65	8.27	7.90	7.52
77220	.0860	#44	2.184	1-3/4"	3/4"	8.94	8.55	8.16	7.77
77225	.0890	#43	2.261	1-3/4"	3/4"	9.19	8.79	8.39	7.99
77230	.0935	#42	2.375	1-3/4"	3/4"	9.32	8.91	8.51	8.10
77235	.0938	3/32"	2.383	1-3/4"	3/4"	9.53	9.12	8.70	8.29
77240	.0960	#41	2.438	1-13/16"	13/16"	9.61	9.20	8.78	8.36
77245	.0980	#40	2.489	1-13/16"	13/16"	9.76	9.34	8.91	8.49
77250	.0984		2.500	46	21	9.81	9.38	8.96	8.53
77255	.0995	#39	2.527	1-13/16"	13/16"	9.86	9.43	9.00	8.57
77260	.1015	#38	2.578	1-13/16"	13/16"	9.95	9.52	9.08	8.65
77265	.1040	#37	2.642	1-13/16"	13/16"	10.02	9.58	9.15	8.71
77270	.1065	#36	2.705	1-13/16"	13/16"	10.09	9.65	9.21	8.77
77275	.1094	7/64"	2.779	1-13/16"	13/16"	10.15	9.71	9.27	8.83
77280	.1100	#35	2.794	1-7/8"	7/8"	10.22	9.78	9.33	8.89
77285	.1110	#34	2.819	1-7/8"	7/8"	10.34	9.89	9.44	8.99
77290	.1130	#33	2.870	1-7/8"	7/8"	10.41	9.96	9.50	9.05
77295	.1160	#32	2.946	1-7/8"	7/8"	10.48	10.02	9.57	9.11
77300	.1181		3.000	48	22	10.60	10.14	9.68	9.22
77305	.1200	#31	3.048	1-7/8"	7/8"	10.67	10.21	9.74	9.28
77310	.1250	1/8"	3.175	1-7/8"	7/8"	10.79	10.32	9.85	9.38
77315	.1285	#30	3.264	1-15/16"	15/16"	11.09	10.60	10.12	9.64
77320	.1360	#29	3.454	1-15/16"	15/16"	11.37	10.88	10.38	9.89
77325	.1378		3.500	49	24	11.74	11.23	10.72	10.21
77330	.1405	#28	3.569	1-15/16"	15/16"	11.90	11.39	10.87	10.35
77335	.1406	9/64"	3.571	1-15/16"	15/16"	12.02	11.50	10.97	10.45
77340	.1440	#27	3.658	2-1/16"	1"	13.08	12.51	11.94	11.37
77345	.1470	#26	3.734	2-1/16"	1"	13.21	12.64	12.06	11.49
77350	.1495	#25	3.797	2-1/16"	1"	13.39	12.80	12.22	11.64
77355	.1520	#24	3.861	2-1/16"	1"	13.41	12.83	12.24	11.66
77360	.1540	#23	3.912	2-1/16"	1"	13.50	12.91	12.33	11.74
77365	.1562	5/32"	3.967	2-1/16"	1"	13.59	13.00	12.41	11.82
77370	.1570	#22	3.988	2-1/8"	1-1/16"	14.44	13.82	13.19	12.56
77375	.1575		4.000	54	27	14.63	13.99	13.36	12.72

continued →

# Series 1520 (continued)

.1590" - .3346"  
(4.039mm - 8.500mm)

DRILLS

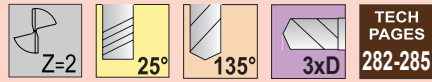
EDP#	$d^{\dagger}$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
77380	.1590	#21	4.039	2-1/8"	1-1/16"	14.80	14.16	13.51	12.87
77385	.1610	#20	4.089	2-1/8"	1-1/16"	14.90	14.26	13.61	12.96
77390	.1660	#19	4.216	2-1/8"	1-1/16"	15.51	14.84	14.16	13.49
77395	.1695	#18	4.305	2-1/8"	1-1/16"	15.71	15.03	14.34	13.66
77400	.1719	11/64"	4.366	2-1/8"	1-1/16"	16.03	15.33	14.64	13.94
77405	.1730	#17	4.394	2-3/16"	1-1/8"	16.25	15.54	14.84	14.13
77410	.1770	#16	4.496	2-3/16"	1-1/8"	16.43	15.72	15.00	14.29
77415	.1772		4.500	56	29	16.51	15.80	15.08	14.36
77420	.1800	#15	4.572	2-3/16"	1-1/8"	16.58	15.86	15.14	14.42
77425	.1820	#14	4.623	2-3/16"	1-1/8"	16.96	16.23	15.49	14.75
77430	.1850	#13	4.700	2-3/16"	1-1/8"	17.10	16.36	15.61	14.87
77435	.1875	3/16"	4.763	2-3/16"	1-1/8"	17.17	16.42	15.68	14.93
77440	.1890	#12	4.801	2-1/4"	1-3/16"	17.73	16.96	16.19	15.42
77445	.1910	#11	4.851	2-1/4"	1-3/16"	17.93	17.15	16.37	15.59
77450	.1935	#10	4.915	2-1/4"	1-3/16"	18.78	17.96	17.15	16.33
77455	.1960	#9	4.978	2-1/4"	1-3/16"	19.25	18.41	17.58	16.74
77460	.1969		5.000	57	30	19.37	18.52	17.68	16.84
77465	.1990	#8	5.055	2-1/4"	1-3/16"	19.49	18.65	17.80	16.95
77470	.2010	#7	5.105	2-1/4"	1-3/16"	20.07	19.20	18.32	17.45
77475	.2031	13/64"	5.159	2-1/4"	1-3/16"	20.22	19.34	18.46	17.58
77480	.2040	#6	5.182	2-3/8"	1-1/4"	20.63	19.73	18.84	17.94
77485	.2055	#5	5.220	2-3/8"	1-1/4"	21.06	20.14	19.23	18.31
77490	.2090	#4	5.309	2-3/8"	1-1/4"	21.42	20.49	19.56	18.63
77495	.2130	#3	5.410	2-3/8"	1-1/4"	21.79	20.85	19.90	18.95
77500	.2165		5.500	60	32	21.97	21.01	20.06	19.10
77505	.2188	7/32"	5.558	2-3/8"	1-1/4"	22.13	21.16	20.20	19.24
77510	.2210	#2	5.613	2-7/16"	1-5/16"	22.67	21.68	20.70	19.71
77515	.2280	#1	5.791	2-7/16"	1-5/16"	22.80	21.81	20.82	19.83
77520	.2340	A	5.944	2-7/16"	1-5/16"	22.85	21.86	20.86	19.87
77525	.2344	15/64"	5.954	2-7/16"	1-5/16"	22.91	21.91	20.92	19.92
77530	.2362		6.000	64	35	22.99	21.99	20.99	19.99
77535	.2380	B	6.045	2-1/2"	1-3/8"	23.07	22.07	21.06	20.06
77540	.2420	C	6.147	2-1/2"	1-3/8"	23.24	22.23	21.22	20.21
77545	.2460	D	6.248	2-1/2"	1-3/8"	23.41	22.40	21.38	20.36
77550	.2500	1/4" / E	6.350	2-1/2"	1-3/8"	23.58	22.55	21.53	20.50
77555	.2559		6.500	67	37	24.14	23.09	22.04	20.99
77560	.2570	F	6.528	2-5/8"	1-7/16"	24.66	23.58	22.51	21.44
77565	.2610	G	6.629	2-5/8"	1-7/16"	25.13	24.04	22.94	21.85
77570	.2656	17/64"	6.746	2-5/8"	1-7/16"	25.66	24.54	23.43	22.31
77575	.2660	H	6.756	2-11/16"	1-1/2"	26.38	25.23	24.09	22.94
77580	.2720	I	6.909	2-11/16"	1-1/2"	26.69	25.53	24.37	23.21
77585	.2756		7.000	68	38	26.90	25.73	24.56	23.39
77590	.2770	J	7.036	2-11/16"	1-1/2"	27.16	25.98	24.80	23.62
77595	.2810	K	7.137	2-11/16"	1-1/2"	27.40	26.21	25.02	23.83
77600	.2812	9/32"	7.142	2-11/16"	1-1/2"	27.53	26.33	25.14	23.94
77605	.2900	L	7.366	2-3/4"	1-9/16"	28.55	27.31	26.07	24.83
77610	.2950	M	7.493	2-3/4"	1-9/16"	30.56	29.23	27.90	26.57
77615	.2953		7.500	70	40	30.56	29.23	27.90	26.57
77620	.2969	19/64"	7.541	2-3/4"	1-9/16"	30.71	29.37	28.04	26.70
77625	.3020	N	7.671	2-15/16"	1-5/8"	32.36	30.95	29.55	28.14
77630	.3125	5/16"	7.938	2-15/16"	1-5/8"	32.48	31.06	29.65	28.24
77635	.3150		8.000	75	43	34.83	33.32	31.80	30.29
77640	.3160	O	8.026	2-15/16"	1-11/16"	34.83	33.32	31.80	30.29
77645	.3230	P	8.204	2-15/16"	1-11/16"	35.14	33.62	32.09	30.56
77650	.3281	21/64"	8.334	2-15/16"	1-11/16"	35.36	33.83	32.29	30.75
77655	.3320	Q	8.433	3"	1-11/16"	36.18	34.61	33.03	31.46
77660	.3346		8.500	76	43	36.51	34.93	33.34	31.75

EDP#	$d^+$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
77665	.3390	R	8.611	3"	1-11/16"	37.67	36.04	34.40	32.76
77670	.3438	11/32"	8.733	3"	1-11/16"	39.22	37.51	35.81	34.10
77675	.3480	S	8.839	3-1/16"	1-3/4"	39.74	38.02	36.29	34.56
77680	.3543		9.000	78	44	39.97	38.24	36.50	34.76
77685	.3580	T	9.093	3-1/16"	1-3/4"	40.14	38.39	36.65	34.90
77690	.3594	23/64"	9.129	3-1/16"	1-3/4"	40.41	38.65	36.90	35.14
77695	.3680	U	9.347	3-1/8"	1-13/16"	44.26	42.34	40.41	38.49
77700	.3740		9.500	79	46	44.68	42.74	40.79	38.85
77705	.3750	3/8"	9.525	3-1/8"	1-13/16"	45.02	43.07	41.11	39.15
77710	.3770	V	9.576	3-1/4"	1-7/8"	45.87	43.88	41.88	39.89
77715	.3860	W	9.804	3-1/4"	1-7/8"	46.84	44.80	42.77	40.73
77720	.3906	25/64"	9.921	3-1/4"	1-7/8"	47.54	45.47	43.41	41.34
77725	.3937		10.000	84	49	49.25	47.11	44.97	42.83
77730	.3970	X	10.084	3-5/16"	1-15/16"	50.69	48.49	46.28	44.08
77735	.4040	Y	10.262	3-5/16"	1-15/16"	51.12	48.90	46.67	44.45
77740	.4062	13/32"	10.317	3-5/16"	1-15/16"	52.96	50.66	48.35	46.05
77745	.4130	Z	10.490	3-3/8"	2"	53.53	51.21	48.88	46.55
77750	.4134		10.500	86	51	53.53	51.21	48.88	46.55
77755	.4219	27/64"	10.716	3-3/8"	2"	54.11	51.76	49.40	47.05
77760	.4331		11.000	87	52	58.75	56.20	53.64	51.09
77765	.4375	7/16"	11.113	3-7/16"	2-1/16"	58.75	56.20	53.64	51.09
77770	.4528		11.500	91	54	63.74	60.97	58.20	55.43
77775	.4531	29/64"	11.509	3-9/16"	2-1/8"	63.74	60.97	58.20	55.43
77780	.4688	15/32"	11.908	3-5/8"	2-1/8"	67.42	64.49	61.56	58.63
77785	.4724		12.000	94	56	67.68	64.74	61.79	58.85
77790	.4844	31/64"	12.304	3-11/16"	2-3/16"	68.18	65.22	62.25	59.29
77795	.4921		12.500	95	56	68.97	65.97	62.97	59.97
77800	.5000	1/2"	12.700	3-3/4"	2-1/4"	69.46	66.44	63.42	60.40

*Drill and Reamer Manufacturing*

# Series 1520H

.0625" - .1575"  
(1.588mm - 4.000mm)

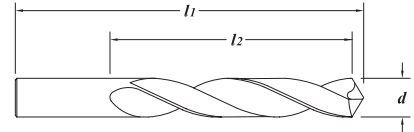
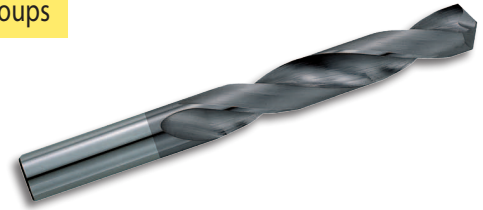


TOLERANCES		
<i>d</i>	+.0000" - .0005" (+.0000 - .0127mm)	
<i>l<sub>1</sub></i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)
<i>l<sub>2</sub></i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)

General purpose for all material groups

## Hardlube Coating

- Solid submicron grain carbide drill
- Excellent heat resistance and lubricity
- No spotting required in most applications
- 4-facet self-centering point
- Live tooling recommended on lathe processes
- Uncoated - page 63



EDP#	<i>d</i> † Diameter		<i>l<sub>1</sub></i> Overall Length	<i>l<sub>2</sub></i> Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
77166	.0625	1/16"	1.588	1-3/4"	5/8"	8.71	8.33	7.95	7.57
77171	.0635	#52	1.613	1-3/4"	11/16"	8.82	8.44	8.05	7.67
77176	.0670	#51	1.702	1-3/4"	11/16"	8.92	8.54	8.15	7.76
77181	.0700	#50	1.778	1-3/4"	11/16"	9.07	8.68	8.28	7.89
77186	.0730	#49	1.854	1-3/4"	11/16"	9.27	8.87	8.46	8.06
77191	.0760	#48	1.930	1-3/4"	11/16"	9.51	9.10	8.68	8.27
77196	.0781	5/64"	1.984	1-3/4"	11/16"	9.79	9.36	8.94	8.51
77201	.0785	#47	1.994	1-3/4"	3/4"	10.05	9.61	9.18	8.74
77206	.0787		2.000	45	19	10.20	9.76	9.31	8.87
77211	.0810	#46	2.057	1-3/4"	3/4"	10.32	9.87	9.42	8.97
77216	.0820	#45	2.083	1-3/4"	3/4"	10.57	10.11	9.65	9.19
77221	.0860	#44	2.184	1-3/4"	3/4"	10.86	10.38	9.91	9.44
77226	.0890	#43	2.261	1-3/4"	3/4"	11.10	10.62	10.13	9.65
77231	.0935	#42	2.375	1-3/4"	3/4"	11.25	10.76	10.27	9.78
77236	.0938	3/32"	2.383	1-3/4"	3/4"	11.45	10.96	10.46	9.96
77241	.0960	#41	2.438	1-13/16"	13/16"	11.53	11.03	10.53	10.03
77246	.0980	#40	2.489	1-13/16"	13/16"	11.67	11.17	10.66	10.15
77251	.0984		2.500	46	21	11.72	11.21	10.70	10.19
77256	.0995	#39	2.527	1-13/16"	13/16"	11.78	11.26	10.75	10.24
77261	.1015	#38	2.578	1-13/16"	13/16"	11.88	11.36	10.85	10.33
77266	.1040	#37	2.642	1-13/16"	13/16"	11.93	11.41	10.89	10.37
77271	.1065	#36	2.705	1-13/16"	13/16"	12.01	11.48	10.96	10.44
77276	.1094	7/64"	2.779	1-13/16"	13/16"	12.06	11.54	11.01	10.49
77281	.1100	#35	2.794	1-7/8"	7/8"	12.13	11.61	11.08	10.55
77286	.1110	#34	2.819	1-7/8"	7/8"	12.26	11.73	11.19	10.66
77291	.1130	#33	2.870	1-7/8"	7/8"	12.33	11.79	11.26	10.72
77296	.1160	#32	2.946	1-7/8"	7/8"	12.41	11.87	11.33	10.79
77301	.1181		3.000	48	22	12.51	11.97	11.42	10.88
77306	.1200	#31	3.048	1-7/8"	7/8"	12.59	12.05	11.50	10.95
77311	.1250	1/8"	3.175	1-7/8"	7/8"	12.72	12.17	11.61	11.06
77316	.1285	#30	3.264	1-15/16"	15/16"	13.00	12.43	11.87	11.30
77321	.1360	#29	3.454	1-15/16"	15/16"	13.29	12.72	12.14	11.56
77326	.1378		3.500	49	24	13.67	13.08	12.48	11.89
77331	.1405	#28	3.569	1-15/16"	15/16"	13.81	13.21	12.61	12.01
77336	.1406	9/64"	3.571	1-15/16"	15/16"	13.94	13.33	12.73	12.12
77341	.1440	#27	3.658	2-1/16"	1"	15.00	14.34	13.69	13.04
77346	.1470	#26	3.734	2-1/16"	1"	15.15	14.49	13.83	13.17
77351	.1495	#25	3.797	2-1/16"	1"	15.28	14.62	13.95	13.29
77356	.1520	#24	3.861	2-1/16"	1"	15.33	14.66	14.00	13.33
77361	.1540	#23	3.912	2-1/16"	1"	15.42	14.75	14.08	13.41
77366	.1562	5/32"	3.967	2-1/16"	1"	15.50	14.83	14.15	13.48
77371	.1570	#22	3.988	2-1/8"	1-1/16"	16.36	15.65	14.94	14.23
77376	.1575		4.000	54	27	16.54	15.82	15.10	14.38

EDP#	$d^+$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
77381	.1590	#21	4.039	2-1/8"	1-1/16"	16.73	16.01	15.28	14.55
77386	.1610	#20	4.089	2-1/8"	1-1/16"	16.84	16.10	15.37	14.64
77391	.1660	#19	4.216	2-1/8"	1-1/16"	17.43	16.68	15.92	15.16
77396	.1695	#18	4.305	2-1/8"	1-1/16"	17.62	16.85	16.09	15.32
77401	.1719	11/64"	4.366	2-1/8"	1-1/16"	17.93	17.15	16.37	15.59
77406	.1730	#17	4.394	2-3/16"	1-1/8"	18.17	17.38	16.59	15.80
77411	.1770	#16	4.496	2-3/16"	1-1/8"	18.34	17.55	16.75	15.95
77416	.1772		4.500	56	29	18.43	17.63	16.83	16.03
77421	.1800	#15	4.572	2-3/16"	1-1/8"	18.52	17.71	16.91	16.10
77426	.1820	#14	4.623	2-3/16"	1-1/8"	18.88	18.06	17.24	16.42
77431	.1850	#13	4.700	2-3/16"	1-1/8"	19.01	18.18	17.36	16.53
77436	.1875	3/16"	4.763	2-3/16"	1-1/8"	19.07	18.24	17.41	16.58
77441	.1890	#12	4.801	2-1/4"	1-3/16"	21.05	20.13	19.22	18.30
77446	.1910	#11	4.851	2-1/4"	1-3/16"	21.24	20.32	19.39	18.47
77451	.1935	#10	4.915	2-1/4"	1-3/16"	22.07	21.11	20.15	19.19
77456	.1960	#9	4.978	2-1/4"	1-3/16"	22.56	21.58	20.60	19.62
77461	.1969		5.000	57	30	22.67	21.68	20.70	19.71
77466	.1990	#8	5.055	2-1/4"	1-3/16"	22.78	21.79	20.80	19.81
77471	.2010	#7	5.105	2-1/4"	1-3/16"	23.38	22.36	21.35	20.33
77476	.2031	13/64"	5.159	2-1/4"	1-3/16"	23.52	22.50	21.47	20.45
77481	.2040	#6	5.182	2-3/8"	1-1/4"	23.94	22.90	21.86	20.82
77486	.2055	#5	5.220	2-3/8"	1-1/4"	24.36	23.30	22.24	21.18
77491	.2090	#4	5.309	2-3/8"	1-1/4"	24.75	23.67	22.60	21.52
77496	.2130	#3	5.410	2-3/8"	1-1/4"	25.10	24.01	22.92	21.83
77501	.2165		5.500	60	32	25.29	24.19	23.09	21.99
77506	.2188	7/32"	5.558	2-3/8"	1-1/4"	25.43	24.32	23.22	22.11
77511	.2210	#2	5.613	2-7/16"	1-5/16"	25.98	24.85	23.72	22.59
77516	.2280	#1	5.791	2-7/16"	1-5/16"	26.12	24.98	23.85	22.71
77521	.2340	A	5.944	2-7/16"	1-5/16"	26.16	25.03	23.89	22.75
77526	.2344	15/64"	5.954	2-7/16"	1-5/16"	26.21	25.07	23.93	22.79
77531	.2362		6.000	64	35	26.28	25.14	23.99	22.85
77536	.2380	B	6.045	2-1/2"	1-3/8"	26.37	25.22	24.08	22.93
77541	.2420	C	6.147	2-1/2"	1-3/8"	26.54	25.39	24.23	23.08
77546	.2460	D	6.248	2-1/2"	1-3/8"	26.71	25.55	24.39	23.23
77551	.2500	1/4" / E	6.350	2-1/2"	1-3/8"	26.88	25.71	24.54	23.37
77556	.2559		6.500	67	37	30.00	28.70	27.39	26.09
77561	.2570	F	6.528	2-5/8"	1-7/16"	30.51	29.18	27.86	26.53
77566	.2610	G	6.629	2-5/8"	1-7/16"	31.00	29.66	28.31	26.96
77571	.2656	17/64"	6.746	2-5/8"	1-7/16"	31.53	30.16	28.79	27.42
77576	.2660	H	6.756	2-11/16"	1-1/2"	32.26	30.86	29.45	28.05
77581	.2720	I	6.909	2-11/16"	1-1/2"	32.56	31.14	29.73	28.31
77586	.2756		7.000	68	38	32.78	31.35	29.93	28.50
77591	.2770	J	7.036	2-11/16"	1-1/2"	33.03	31.59	30.16	28.72
77596	.2810	K	7.137	2-11/16"	1-1/2"	33.26	31.81	30.37	28.92
77601	.2812	9/32"	7.142	2-11/16"	1-1/2"	33.41	31.96	30.50	29.05
77606	.2900	L	7.366	2-3/4"	1-9/16"	34.41	32.91	31.42	29.92
77611	.2950	M	7.493	2-3/4"	1-9/16"	36.41	34.83	33.24	31.66
77616	.2953		7.500	70	40	36.41	34.83	33.24	31.66
77621	.2969	19/64"	7.541	2-3/4"	1-9/16"	36.58	34.99	33.40	31.81
77626	.3020	N	7.671	2-15/16"	1-5/8"	38.24	36.58	34.91	33.25
77631	.3125	5/16"	7.938	2-15/16"	1-5/8"	38.36	36.70	35.03	33.36
77636	.3150		8.000	75	43	40.71	38.94	37.17	35.40
77641	.3160	O	8.026	2-15/16"	1-11/16"	40.71	38.94	37.17	35.40
77646	.3230	P	8.204	2-15/16"	1-11/16"	41.01	39.23	37.44	35.66
77651	.3281	21/64"	8.334	2-15/16"	1-11/16"	41.24	39.45	37.65	35.86
77656	.3320	Q	8.433	3"	1-11/16"	42.06	40.23	38.40	36.57
77661	.3346		8.500	76	43	42.39	40.55	38.70	36.86

continued →

Series 1520H (continued)

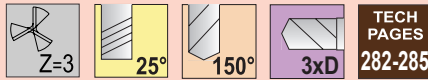
.3390" - .5000"  
(8.611mm - 12.700mm)

EDP#	$d^{\dagger}$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
77666	.3390	R	8.611	3"	1-11/16"	43.55	41.66	39.76	37.87
77671	.3438	11/32"	8.733	3"	1-11/16"	45.08	43.12	41.16	39.20
77676	.3480	S	8.839	3-1/16"	1-3/4"	47.69	45.62	43.54	41.47
77681	.3543		9.000	78	44	47.93	45.85	43.76	41.68
77686	.3580	T	9.093	3-1/16"	1-3/4"	48.08	45.99	43.90	41.81
77691	.3594	23/64"	9.129	3-1/16"	1-3/4"	48.38	46.28	44.17	42.07
77696	.3680	U	9.347	3-1/8"	1-13/16"	52.21	49.94	47.67	45.40
77701	.3740		9.500	79	46	52.62	50.34	48.05	45.76
77706	.3750	3/8"	9.525	3-1/8"	1-13/16"	52.97	50.67	48.36	46.06
77711	.3770	V	9.576	3-1/4"	1-7/8"	55.00	52.61	50.22	47.83
77716	.3860	W	9.804	3-1/4"	1-7/8"	55.97	53.54	51.10	48.67
77721	.3906	25/64"	9.921	3-1/4"	1-7/8"	56.66	54.20	51.73	49.27
77726	.3937		10.000	84	49	58.37	55.84	53.30	50.76
77731	.3970	X	10.084	3-5/16"	1-15/16"	59.80	57.20	54.60	52.00
77736	.4040	Y	10.262	3-5/16"	1-15/16"	60.21	57.60	54.98	52.36
77741	.4062	13/32"	10.317	3-5/16"	1-15/16"	62.08	59.38	56.68	53.98
77746	.4130	Z	10.490	3-3/8"	2"	62.63	59.91	57.18	54.46
77751	.4134		10.500	86	51	62.63	59.91	57.18	54.46
77756	.4219	27/64"	10.716	3-3/8"	2"	63.23	60.48	57.73	54.98
77761	.4331		11.000	87	52	67.87	64.92	61.97	59.02
77766	.4375	7/16"	11.113	3-7/16"	2-1/16"	67.87	64.92	61.97	59.02
77771	.4528		11.500	91	54	72.85	69.69	66.52	63.35
77776	.4531	29/64"	11.509	3-9/16"	2-1/8"	72.85	69.69	66.52	63.35
77781	.4688	15/32"	11.908	3-5/8"	2-1/8"	76.54	73.22	69.89	66.56
77786	.4724		12.000	94	56	76.77	73.44	70.10	66.76
77791	.4844	31/64"	12.304	3-11/16"	2-3/16"	77.30	73.94	70.58	67.22
77796	.4921		12.500	95	56	78.06	74.67	71.27	67.88
77801	.5000	1/2"	12.700	3-3/4"	2-1/4"	78.56	75.14	71.73	68.31



**TOLERANCES**

<i>d</i>	+.0000" - .0005" (+.0000 - .0127mm)	
<i>l1</i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)
<i>l2</i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)

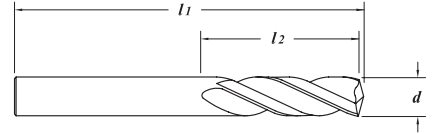


**Series 1120**

.1094" - .2165"  
(2.779mm - 5.500mm)

Recommended for cast iron, tungsten, and materials with high silicon content

- Solid submicron grain carbide drill
- Self-centering drill point
- Near reamer finishes
- Can be used as a core drill
- Stub length reduces deflection and vibration
- Tighter tolerance holes
- Improved roundness and straightness
- Live tooling recommended on lathe processes
- Hardlube Coating - page 71



EDP#	<i>d</i> <sup>†</sup>		<i>l1</i>	<i>l2</i>	1-11	12-24	25-49	50-100	
	Decimal	Diameter Metric							
78275	.1094	7/64"	2.779	1-13/16"	13/16"	12.16	11.63	11.10	10.57
78280	.1100	#35	2.794	1-7/8"	7/8"	12.31	11.77	11.24	10.70
78285	.1110	#34	2.819	1-7/8"	7/8"	12.44	11.90	11.36	10.82
78290	.1130	#33	2.870	1-7/8"	7/8"	12.67	12.12	11.57	11.02
78295	.1160	#32	2.946	1-7/8"	7/8"	12.85	12.29	11.73	11.17
78300	.1181		3.000	48	22	12.96	12.40	11.83	11.27
78305	.1200	#31	3.048	1-7/8"	7/8"	13.05	12.49	11.92	11.35
78310	.1250	1/8"	3.175	1-7/8"	7/8"	13.21	12.64	12.06	11.49
78315	.1285	#30	3.264	1-15/16"	15/16"	13.56	12.97	12.38	11.79
78320	.1360	#29	3.454	1-15/16"	15/16"	13.92	13.31	12.71	12.10
78325	.1378		3.500	49	24	14.38	13.75	13.13	12.50
78330	.1405	#28	3.569	1-15/16"	15/16"	14.55	13.92	13.28	12.65
78335	.1406	9/64"	3.571	1-15/16"	15/16"	14.73	14.09	13.45	12.81
78340	.1440	#27	3.658	2-1/16"	1"	15.88	15.19	14.50	13.81
78345	.1470	#26	3.734	2-1/16"	1"	16.10	15.40	14.70	14.00
78350	.1495	#25	3.797	2-1/16"	1"	16.24	15.53	14.83	14.12
78355	.1520	#24	3.861	2-1/16"	1"	16.27	15.57	14.86	14.15
78360	.1540	#23	3.912	2-1/16"	1"	16.42	15.71	14.99	14.28
78365	.1562	5/32"	3.967	2-1/16"	1"	16.49	15.77	15.06	14.34
78370	.1570	#22	3.988	2-1/8"	1-1/16"	17.54	16.78	16.01	15.25
78375	.1575		4.000	54	27	17.54	16.78	16.01	15.25
78380	.1590	#21	4.039	2-1/8"	1-1/16"	17.95	17.17	16.39	15.61
78385	.1610	#20	4.089	2-1/8"	1-1/16"	17.95	17.17	16.39	15.61
78390	.1660	#19	4.216	2-1/8"	1-1/16"	18.10	17.31	16.53	15.74
78395	.1695	#18	4.305	2-1/8"	1-1/16"	18.22	17.42	16.63	15.84
78400	.1719	11/64"	4.366	2-1/8"	1-1/16"	18.33	17.53	16.74	15.94
78405	.1730	#17	4.394	2-3/16"	1-1/8"	19.18	18.35	17.51	16.68
78410	.1770	#16	4.496	2-3/16"	1-1/8"	19.38	18.54	17.69	16.85
78415	.1772		4.500	56	29	19.48	18.63	17.79	16.94
78420	.1800	#15	4.572	2-3/16"	1-1/8"	19.57	18.72	17.87	17.02
78425	.1820	#14	4.623	2-3/16"	1-1/8"	20.01	19.14	18.27	17.40
78430	.1850	#13	4.700	2-3/16"	1-1/8"	20.13	19.25	18.38	17.50
78435	.1875	3/16"	4.763	2-3/16"	1-1/8"	20.13	19.25	18.38	17.50
78440	.1890	#12	4.801	2-1/4"	1-3/16"	20.27	19.39	18.51	17.63
78445	.1910	#11	4.851	2-1/4"	1-3/16"	20.50	19.61	18.72	17.83
78450	.1935	#10	4.915	2-1/4"	1-3/16"	21.46	20.53	19.59	18.66
78455	.1960	#9	4.978	2-1/4"	1-3/16"	21.99	21.03	20.08	19.12
78460	.1969		5.000	57	30	22.13	21.16	20.20	19.24
78465	.1990	#8	5.055	2-1/4"	1-3/16"	22.29	21.32	20.35	19.38
78470	.2010	#7	5.105	2-1/4"	1-3/16"	22.95	21.96	20.96	19.96
78475	.2031	13/64"	5.159	2-1/4"	1-3/16"	23.82	22.78	21.75	20.71
78480	.2040	#6	5.182	2-3/8"	1-1/4"	23.97	22.92	21.88	20.84
78485	.2055	#5	5.220	2-3/8"	1-1/4"	24.07	23.02	21.98	20.93
78490	.2090	#4	5.309	2-3/8"	1-1/4"	24.48	23.42	22.35	21.29
78495	.2130	#3	5.410	2-3/8"	1-1/4"	24.90	23.82	22.73	21.65
78500	.2165		5.500	60	32	25.10	24.01	22.92	21.83

continued →

# Series 1120 (continued)

.2188" - .5000"  
(5.558mm - 12.700mm)

DRILLS

EDP#	$d^{\dagger}$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
78505	.2188	7/32"	5.558	2-3/8"	1-1/4"	25.31	24.21	23.11	22.01
78510	.2210	#2	5.613	2-7/16"	1-5/16"	25.92	24.79	23.67	22.54
78515	.2280	#1	5.791	2-7/16"	1-5/16"	26.06	24.93	23.79	22.66
78520	.2340	A	5.944	2-7/16"	1-5/16"	26.19	25.05	23.91	22.77
78525	.2344	15/64"	5.954	2-7/16"	1-5/16"	26.34	25.19	24.05	22.90
78530	.2362		6.000	64	35	26.39	25.25	24.10	22.95
78535	.2380	B	6.045	2-1/2"	1-3/8"	26.51	25.36	24.20	23.05
78540	.2420	C	6.147	2-1/2"	1-3/8"	26.70	25.54	24.38	23.22
78545	.2460	D	6.248	2-1/2"	1-3/8"	26.88	25.71	24.54	23.37
78550	.2500	1/4" / E	6.350	2-1/2"	1-3/8"	27.07	25.89	24.72	23.54
78555	.2559		6.500	67	37	27.75	26.54	25.34	24.13
78560	.2570	F	6.528	2-5/8"	1-7/16"	28.31	27.08	25.85	24.62
78565	.2610	G	6.629	2-5/8"	1-7/16"	28.75	27.50	26.25	25.00
78570	.2656	17/64"	6.746	2-5/8"	1-7/16"	29.30	28.03	26.75	25.48
78575	.2660	H	6.756	2-11/16"	1-1/2"	30.16	28.85	27.54	26.23
78580	.2720	I	6.909	2-11/16"	1-1/2"	30.53	29.21	27.88	26.55
78585	.2756		7.000	68	38	30.75	29.41	28.08	26.74
78590	.2770	J	7.036	2-11/16"	1-1/2"	31.02	29.67	28.32	26.97
78595	.2810	K	7.137	2-11/16"	1-1/2"	31.30	29.94	28.58	27.22
78600	.2812	9/32"	7.142	2-11/16"	1-1/2"	32.41	31.00	29.59	28.18
78605	.2900	L	7.366	2-3/4"	1-9/16"	33.61	32.15	30.69	29.23
78610	.2950	M	7.493	2-3/4"	1-9/16"	34.58	33.08	31.57	30.07
78615	.2953		7.500	70	40	34.58	33.08	31.57	30.07
78620	.2969	19/64"	7.541	2-3/4"	1-9/16"	34.58	33.08	31.57	30.07
78625	.3020	N	7.671	2-15/16"	1-5/8"	35.96	34.40	32.83	31.27
78630	.3125	5/16"	7.938	2-15/16"	1-5/8"	36.11	34.54	32.97	31.40
78635	.3150		8.000	75	43	38.72	37.04	35.35	33.67
78640	.3160	O	8.026	2-15/16"	1-11/16"	38.72	37.04	35.35	33.67
78645	.3230	P	8.204	2-15/16"	1-11/16"	38.72	37.04	35.35	33.67
78650	.3281	21/64"	8.334	2-15/16"	1-11/16"	40.41	38.65	36.90	35.14
78655	.3320	Q	8.433	3"	1-11/16"	41.35	39.56	37.76	35.96
78660	.3346		8.500	76	43	41.73	39.92	38.10	36.29
78665	.3390	R	8.611	3"	1-11/16"	43.02	41.15	39.28	37.41
78670	.3438	11/32"	8.733	3"	1-11/16"	44.80	42.86	40.91	38.96
78675	.3480	S	8.839	3-1/16"	1-3/4"	48.24	46.15	44.05	41.95
78680	.3543		9.000	78	44	48.56	46.45	44.34	42.23
78685	.3580	T	9.093	3-1/16"	1-3/4"	48.73	46.61	44.49	42.37
78690	.3594	23/64"	9.129	3-1/16"	1-3/4"	49.12	46.98	44.85	42.71
78695	.3680	U	9.347	3-1/8"	1-13/16"	52.43	50.15	47.87	45.59
78700	.3740		9.500	79	46	53.34	51.02	48.70	46.38
78705	.3750	3/8"	9.525	3-1/8"	1-13/16"	53.34	51.02	48.70	46.38
78710	.3770	V	9.576	3-1/4"	1-7/8"	53.97	51.62	49.28	46.93
78715	.3860	W	9.804	3-1/4"	1-7/8"	57.48	54.98	52.48	49.98
78720	.3906	25/64"	9.921	3-1/4"	1-7/8"	58.33	55.79	53.26	50.72
78725	.3937		10.000	84	49	60.42	57.79	55.17	52.54
78730	.3970	X	10.084	3-5/16"	1-15/16"	62.23	59.52	56.82	54.11
78735	.4040	Y	10.262	3-5/16"	1-15/16"	62.70	59.97	57.25	54.52
78740	.4062	13/32"	10.317	3-5/16"	1-15/16"	64.98	62.15	59.33	56.50
78745	.4130	Z	10.490	3-3/8"	2"	65.65	62.80	59.94	57.09
78750	.4134		10.500	86	51	65.65	62.80	59.94	57.09
78755	.4219	27/64"	10.716	3-3/8"	2"	66.40	63.51	60.63	57.74
78760	.4331		11.000	87	52	71.36	68.26	65.15	62.05
78765	.4375	7/16"	11.113	3-7/16"	2-1/16"	71.36	68.26	65.15	62.05
78770	.4528		11.500	91	54	77.41	74.04	70.68	67.31
78775	.4531	29/64"	11.509	3-9/16"	2-1/8"	77.41	74.04	70.68	67.31
78780	.4688	15/32"	11.908	3-5/8"	2-1/8"	81.90	78.34	74.78	71.22
78785	.4724		12.000	94	56	82.16	78.58	75.01	71.44
78790	.4844	31/64"	12.304	3-11/16"	2-3/16"	82.44	78.86	75.27	71.69
78795	.4921		12.500	95	56	83.85	80.20	76.56	72.91
78800	.5000	1/2"	12.700	3-3/4"	2-1/4"	84.32	80.65	76.99	73.32

**TOLERANCES**

<i>d</i>	+.0000" - .0005" (+.0000 - .0127mm)	
<i>l1</i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)
<i>l2</i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)



TECH  
PAGES  
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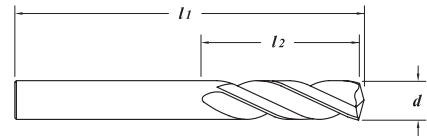
**Series 1120H**

.1094" - .2090"  
(2.779mm - 5.309mm)

Recommended for cast iron, tungsten, and materials with high silicon content

**Hardlube Coating**

- Solid submicron grain carbide drill
- Self-centering drill point
- Near reamer finishes
- Can be used as a core drill
- Excellent heat resistance and lubricity
- Stub length reduces deflection and vibration
- Tighter tolerance holes
- Improved roundness and straightness
- Live tooling recommended on lathe processes
- Uncoated - page 69



EDP#	<i>d</i> † Diameter		<i>l1</i> Overall Length	<i>l2</i> Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
78276	.1094	7/64"	2.779	1-13/16"	13/16"	14.09	13.48	12.86	12.25
78281	.1100	#35	2.794	1-7/8"	7/8"	14.20	13.59	12.97	12.35
78286	.1110	#34	2.819	1-7/8"	7/8"	14.36	13.74	13.11	12.49
78291	.1130	#33	2.870	1-7/8"	7/8"	14.57	13.94	13.30	12.67
78296	.1160	#32	2.946	1-7/8"	7/8"	14.75	14.11	13.47	12.83
78301	.1181		3.000	48	22	14.87	14.22	13.58	12.93
78306	.1200	#31	3.048	1-7/8"	7/8"	14.97	14.32	13.67	13.02
78311	.1250	1/8"	3.175	1-7/8"	7/8"	15.15	14.49	13.83	13.17
78316	.1285	#30	3.264	1-15/16"	15/16"	15.48	14.81	14.13	13.46
78321	.1360	#29	3.454	1-15/16"	15/16"	15.84	15.15	14.46	13.77
78326	.1378		3.500	49	24	16.30	15.59	14.88	14.17
78331	.1405	#28	3.569	1-15/16"	15/16"	16.47	15.75	15.04	14.32
78336	.1406	9/64"	3.571	1-15/16"	15/16"	16.64	15.92	15.19	14.47
78341	.1440	#27	3.658	2-1/16"	1"	17.80	17.03	16.25	15.48
78346	.1470	#26	3.734	2-1/16"	1"	18.00	17.22	16.43	15.65
78351	.1495	#25	3.797	2-1/16"	1"	18.16	17.37	16.58	15.79
78356	.1520	#24	3.861	2-1/16"	1"	18.19	17.40	16.61	15.82
78361	.1540	#23	3.912	2-1/16"	1"	18.33	17.53	16.74	15.94
78366	.1562	5/32"	3.967	2-1/16"	1"	18.42	17.62	16.82	16.02
78371	.1570	#22	3.988	2-1/8"	1-1/16"	19.47	18.62	17.78	16.93
78376	.1575		4.000	54	27	19.47	18.62	17.78	16.93
78381	.1590	#21	4.039	2-1/8"	1-1/16"	19.86	19.00	18.13	17.27
78386	.1610	#20	4.089	2-1/8"	1-1/16"	19.86	19.00	18.13	17.27
78391	.1660	#19	4.216	2-1/8"	1-1/16"	20.01	19.14	18.27	17.40
78396	.1695	#18	4.305	2-1/8"	1-1/16"	20.13	19.25	18.38	17.50
78401	.1719	11/64"	4.366	2-1/8"	1-1/16"	20.25	19.37	18.49	17.61
78406	.1730	#17	4.394	2-3/16"	1-1/8"	21.08	20.16	19.25	18.33
78411	.1770	#16	4.496	2-3/16"	1-1/8"	21.30	20.37	19.45	18.52
78416	.1772		4.500	56	29	21.39	20.46	19.53	18.60
78421	.1800	#15	4.572	2-3/16"	1-1/8"	21.48	20.55	19.61	18.68
78426	.1820	#14	4.623	2-3/16"	1-1/8"	21.93	20.98	20.02	19.07
78431	.1850	#13	4.700	2-3/16"	1-1/8"	22.03	21.08	20.12	19.16
78436	.1875	3/16"	4.763	2-3/16"	1-1/8"	22.03	21.08	20.12	19.16
78441	.1890	#12	4.801	2-1/4"	1-3/16"	23.60	22.57	21.55	20.52
78446	.1910	#11	4.851	2-1/4"	1-3/16"	23.81	22.77	21.74	20.70
78451	.1935	#10	4.915	2-1/4"	1-3/16"	24.77	23.69	22.62	21.54
78456	.1960	#9	4.978	2-1/4"	1-3/16"	25.30	24.20	23.10	22.00
78461	.1969		5.000	57	30	25.43	24.32	23.22	22.11
78466	.1990	#8	5.055	2-1/4"	1-3/16"	25.59	24.48	23.36	22.25
78471	.2010	#7	5.105	2-1/4"	1-3/16"	26.25	25.11	23.97	22.83
78476	.2031	13/64"	5.159	2-1/4"	1-3/16"	27.13	25.95	24.77	23.59
78481	.2040	#6	5.182	2-3/8"	1-1/4"	27.27	26.08	24.90	23.71
78486	.2055	#5	5.220	2-3/8"	1-1/4"	27.39	26.20	25.01	23.82
78491	.2090	#4	5.309	2-3/8"	1-1/4"	27.80	26.59	25.38	24.17

continued →

# Series 1120H (continued)

.2130" - .5000"  
(5.410mm - 12.700mm)

DRILLS

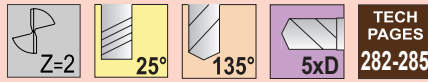
EDP#	$d^{\dagger}$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
78496	.2130	#3	5.410	2-3/8"	1-1/4"	28.22	26.99	25.77	24.54
78501	.2165		5.500	60	32	28.41	27.17	25.94	24.70
78506	.2188	7/32"	5.558	2-3/8"	1-1/4"	28.60	27.36	26.11	24.87
78511	.2210	#2	5.613	2-7/16"	1-5/16"	29.23	27.96	26.69	25.42
78516	.2280	#1	5.791	2-7/16"	1-5/16"	29.35	28.07	26.80	25.52
78521	.2340	A	5.944	2-7/16"	1-5/16"	29.51	28.23	26.94	25.66
78526	.2344	15/64"	5.954	2-7/16"	1-5/16"	29.62	28.34	27.05	25.76
78531	.2362		6.000	64	35	29.70	28.41	27.12	25.83
78536	.2380	B	6.045	2-1/2"	1-3/8"	29.81	28.51	27.22	25.92
78541	.2420	C	6.147	2-1/2"	1-3/8"	30.00	28.70	27.39	26.09
78546	.2460	D	6.248	2-1/2"	1-3/8"	30.18	28.86	27.55	26.24
78551	.2500	1/4" / E	6.350	2-1/2"	1-3/8"	30.36	29.04	27.72	26.40
78556	.2559		6.500	67	37	33.61	32.15	30.69	29.23
78561	.2570	F	6.528	2-5/8"	1-7/16"	34.18	32.69	31.21	29.72
78566	.2610	G	6.629	2-5/8"	1-7/16"	34.62	33.11	31.61	30.10
78571	.2656	17/64"	6.746	2-5/8"	1-7/16"	35.18	33.65	32.12	30.59
78576	.2660	H	6.756	2-11/16"	1-1/2"	36.04	34.47	32.91	31.34
78581	.2720	I	6.909	2-11/16"	1-1/2"	36.40	34.82	33.23	31.65
78586	.2756		7.000	68	38	36.60	35.01	33.42	31.83
78591	.2770	J	7.036	2-11/16"	1-1/2"	36.88	35.28	33.67	32.07
78596	.2810	K	7.137	2-11/16"	1-1/2"	37.18	35.56	33.95	32.33
78601	.2812	9/32"	7.142	2-11/16"	1-1/2"	38.27	36.61	34.94	33.28
78606	.2900	L	7.366	2-3/4"	1-9/16"	39.48	37.76	36.05	34.33
78611	.2950	M	7.493	2-3/4"	1-9/16"	40.46	38.70	36.94	35.18
78616	.2953		7.500	70	40	40.46	38.70	36.94	35.18
78621	.2969	19/64"	7.541	2-3/4"	1-9/16"	40.46	38.70	36.94	35.18
78626	.3020	N	7.671	2-15/16"	1-5/8"	41.83	40.01	38.19	36.37
78631	.3125	5/16"	7.938	2-15/16"	1-5/8"	41.98	40.15	38.33	36.50
78636	.3150		8.000	75	43	44.60	42.66	40.72	38.78
78641	.3160	O	8.026	2-15/16"	1-11/16"	44.60	42.66	40.72	38.78
78646	.3230	P	8.204	2-15/16"	1-11/16"	44.60	42.66	40.72	38.78
78651	.3281	21/64"	8.334	2-15/16"	1-11/16"	46.29	44.28	42.26	40.25
78656	.3320	Q	8.433	3"	1-11/16"	47.23	45.18	43.12	41.07
78661	.3346		8.500	76	43	47.61	45.54	43.47	41.40
78666	.3390	R	8.611	3"	1-11/16"	48.90	46.77	44.65	42.52
78671	.3438	11/32"	8.733	3"	1-11/16"	50.68	48.48	46.27	44.07
78676	.3480	S	8.839	3-1/16"	1-3/4"	57.36	54.87	52.37	49.88
78681	.3543		9.000	78	44	57.67	55.17	52.66	50.15
78686	.3580	T	9.093	3-1/16"	1-3/4"	57.82	55.31	52.79	50.28
78691	.3594	23/64"	9.129	3-1/16"	1-3/4"	58.21	55.68	53.15	50.62
78696	.3680	U	9.347	3-1/8"	1-13/16"	61.55	58.87	56.20	53.52
78701	.3740		9.500	79	46	62.45	59.73	57.02	54.30
78706	.3750	3/8"	9.525	3-1/8"	1-13/16"	62.45	59.73	57.02	54.30
78711	.3770	V	9.576	3-1/4"	1-7/8"	63.07	60.32	57.58	54.84
78716	.3860	W	9.804	3-1/4"	1-7/8"	66.60	63.70	60.81	57.91
78721	.3906	25/64"	9.921	3-1/4"	1-7/8"	67.42	64.49	61.56	58.63
78726	.3937		10.000	84	49	69.53	66.51	63.48	60.46
78731	.3970	X	10.084	3-5/16"	1-15/16"	71.33	68.23	65.13	62.03
78736	.4040	Y	10.262	3-5/16"	1-15/16"	71.82	68.70	65.57	62.45
78741	.4062	13/32"	10.317	3-5/16"	1-15/16"	74.08	70.86	67.64	64.42
78746	.4130	Z	10.490	3-3/8"	2"	74.75	71.50	68.25	65.00
78751	.4134		10.500	86	51	74.75	71.50	68.25	65.00
78756	.4219	27/64"	10.716	3-3/8"	2"	75.52	72.24	68.95	65.67
78761	.4331		11.000	87	52	80.47	76.97	73.47	69.97
78766	.4375	7/16"	11.113	3-7/16"	2-1/16"	80.47	76.97	73.47	69.97
78771	.4528		11.500	91	54	86.53	82.76	79.00	75.24
78776	.4531	29/64"	11.509	3-9/16"	2-1/8"	86.53	82.76	79.00	75.24
78781	.4688	15/32"	11.908	3-5/8"	2-1/8"	91.01	87.05	83.10	79.14
78786	.4724		12.000	94	56	91.26	87.30	83.33	79.36
78791	.4844	31/64"	12.304	3-11/16"	2-3/16"	91.54	87.56	83.58	79.60
78796	.4921		12.500	95	56	92.95	88.91	84.87	80.83
78801	.5000	1/2"	12.700	3-3/4"	2-1/4"	93.44	89.38	85.31	81.25

**TOLERANCES**

<i>d</i>	+.0000" - .0005" (+.0000 - .0127mm)	
<i>l1</i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)
<i>l2</i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)

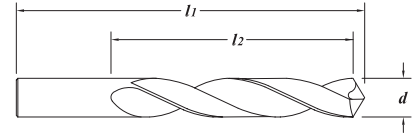
**Series 1205**

.0625" - .1575"  
(1.588mm - 4.000mm)



General purpose for all material groups

- Solid submicron grain carbide drill
- No spotting required in most applications
- 4-facet self-centering point
- Adaptability when converting from high-speed steel
- Live tooling recommended on lathe processes
- Hardlube Coating - page 76



DRILLS

EDP#	<i>d</i> <sup>†</sup> Diameter		<i>l1</i> Overall Length	<i>l2</i> Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
89165	.0625	1/16"	1.588	1-3/4"	3/4"	6.79	6.49	6.20	5.90
89170	.0635	#52	1.613	1-3/4"	3/4"	6.89	6.59	6.29	5.99
89175	.0670	#51	1.702	1-3/4"	3/4"	6.99	6.69	6.38	6.08
89180	.0700	#50	1.778	1-3/4"	7/8"	7.16	6.85	6.54	6.23
89185	.0730	#49	1.854	1-3/4"	7/8"	7.35	7.03	6.71	6.39
89190	.0760	#48	1.930	1-3/4"	7/8"	7.59	7.26	6.93	6.60
89195	.0781	5/64"	1.984	1-3/4"	7/8"	7.88	7.54	7.19	6.85
89200	.0785	#47	1.994	1-3/4"	7/8"	8.14	7.79	7.43	7.08
89205	.0787		2.000	44	22	8.27	7.91	7.55	7.19
89210	.0810	#46	2.057	1-3/4"	7/8"	8.40	8.03	7.67	7.30
89215	.0820	#45	2.083	1-3/4"	7/8"	8.65	8.27	7.90	7.52
89220	.0860	#44	2.184	2"	1"	8.94	8.55	8.16	7.77
89225	.0890	#43	2.261	2"	1"	9.19	8.79	8.39	7.99
89230	.0935	#42	2.375	2"	1"	9.32	8.91	8.51	8.10
89235	.0938	3/32"	2.383	2"	1"	9.53	9.12	8.70	8.29
89240	.0960	#41	2.438	2"	1"	9.61	9.20	8.78	8.36
89245	.0980	#40	2.489	2"	1"	9.76	9.34	8.91	8.49
89250	.0984		2.500	57	32	9.81	9.38	8.96	8.53
89255	.0995	#39	2.527	2-1/4"	1-1/4"	9.86	9.43	9.00	8.57
89260	.1015	#38	2.578	2-1/4"	1-1/4"	9.98	9.55	9.11	8.68
89265	.1040	#37	2.642	2-1/4"	1-1/4"	10.11	9.67	9.23	8.79
89270	.1065	#36	2.705	2-1/4"	1-1/4"	10.24	9.79	9.35	8.90
89275	.1094	7/64"	2.779	2-1/4"	1-1/4"	10.41	9.96	9.50	9.05
89280	.1100	#35	2.794	2-1/4"	1-1/4"	10.52	10.07	9.61	9.15
89285	.1110	#34	2.819	2-1/4"	1-1/4"	10.65	10.19	9.72	9.26
89290	.1130	#33	2.870	2-1/4"	1-1/4"	10.84	10.37	9.90	9.43
89295	.1160	#32	2.946	2-1/4"	1-1/4"	10.96	10.48	10.01	9.53
89300	.1181		3.000	57	32	11.07	10.59	10.11	9.63
89305	.1200	#31	3.048	2-1/4"	1-1/4"	11.14	10.66	10.17	9.69
89310	.1250	1/8"	3.175	2-1/4"	1-1/4"	11.28	10.79	10.30	9.81
89315	.1285	#30	3.264	2-1/4"	1-1/4"	11.57	11.07	10.56	10.06
89320	.1360	#29	3.454	2-1/2"	1-3/8"	11.93	11.41	10.89	10.37
89325	.1378		3.500	63	35	12.32	11.78	11.25	10.71
89330	.1405	#28	3.569	2-1/2"	1-3/8"	12.44	11.90	11.36	10.82
89335	.1406	9/64"	3.571	2-1/2"	1-3/8"	12.58	12.03	11.49	10.94
89340	.1440	#27	3.658	2-1/2"	1-3/8"	13.08	12.51	11.94	11.37
89345	.1470	#26	3.734	2-1/2"	1-3/8"	13.21	12.64	12.06	11.49
89350	.1495	#25	3.797	2-1/2"	1-3/8"	13.39	12.80	12.22	11.64
89355	.1520	#24	3.861	2-1/2"	1-3/8"	13.41	12.83	12.24	11.66
89360	.1540	#23	3.912	2-1/2"	1-3/8"	13.50	12.91	12.33	11.74
89365	.1562	5/32"	3.967	2-1/2"	1-3/8"	13.59	13.00	12.41	11.82
89370	.1570	#22	3.988	2-1/2"	1-3/8"	14.44	13.82	13.19	12.56
89375	.1575		4.000	63	35	14.63	13.99	13.36	12.72

continued →

# Series 1205 (continued)

.1590" - .3346"  
(4.039mm - 8.500mm)

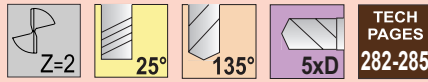
DRILLS

EDP#	$d^{\dagger}$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
89380	.1590	#21	4.039	2-1/2"	1-3/8"	14.80	14.16	13.51	12.87
89385	.1610	#20	4.089	2-1/2"	1-3/8"	14.90	14.26	13.61	12.96
89390	.1660	#19	4.216	2-3/4"	1-5/8"	15.51	14.84	14.16	13.49
89395	.1695	#18	4.305	2-3/4"	1-5/8"	15.71	15.03	14.34	13.66
89400	.1719	11/64"	4.366	2-3/4"	1-5/8"	16.03	15.33	14.64	13.94
89405	.1730	#17	4.394	2-3/4"	1-5/8"	16.25	15.54	14.84	14.13
89410	.1770	#16	4.496	2-3/4"	1-5/8"	16.43	15.72	15.00	14.29
89415	.1772		4.500	70	41	16.51	15.80	15.08	14.36
89420	.1800	#15	4.572	2-3/4"	1-5/8"	16.58	15.86	15.14	14.42
89425	.1820	#14	4.623	2-3/4"	1-5/8"	16.96	16.23	15.49	14.75
89430	.1850	#13	4.700	2-3/4"	1-5/8"	17.10	16.36	15.61	14.87
89435	.1875	3/16"	4.763	2-3/4"	1-5/8"	17.17	16.42	15.68	14.93
89440	.1890	#12	4.801	2-3/4"	1-5/8"	17.73	16.96	16.19	15.42
89445	.1910	#11	4.851	2-3/4"	1-5/8"	17.93	17.15	16.37	15.59
89450	.1935	#10	4.915	2-3/4"	1-5/8"	18.78	17.96	17.15	16.33
89455	.1960	#9	4.978	3"	1-3/4"	19.25	18.41	17.58	16.74
89460	.1969		5.000	76	44	19.37	18.52	17.68	16.84
89465	.1990	#8	5.055	3"	1-3/4"	19.49	18.65	17.80	16.95
89470	.2010	#7	5.105	3"	1-3/4"	20.07	19.20	18.32	17.45
89475	.2031	13/64"	5.159	3"	1-3/4"	20.22	19.34	18.46	17.58
89480	.2040	#6	5.182	3"	1-3/4"	20.63	19.73	18.84	17.94
89485	.2055	#5	5.220	3"	1-3/4"	21.06	20.14	19.23	18.31
89490	.2090	#4	5.309	3"	1-3/4"	21.42	20.49	19.56	18.63
89495	.2130	#3	5.410	3"	1-3/4"	21.79	20.85	19.90	18.95
89500	.2165		5.500	76	44	21.97	21.01	20.06	19.10
89505	.2188	7/32"	5.558	3"	1-3/4"	22.13	21.16	20.20	19.24
89510	.2210	#2	5.613	3"	1-3/4"	22.67	21.68	20.70	19.71
89515	.2280	#1	5.791	3"	1-3/4"	22.80	21.81	20.82	19.83
89520	.2340	A	5.944	3-1/4"	2"	23.07	22.07	21.06	20.06
89525	.2344	15/64"	5.954	3-1/4"	2"	23.13	22.12	21.12	20.11
89530	.2362		6.000	82	50	23.22	22.21	21.20	20.19
89535	.2380	B	6.045	3-1/4"	2"	23.30	22.29	21.27	20.26
89540	.2420	C	6.147	3-1/4"	2"	23.47	22.45	21.43	20.41
89545	.2460	D	6.248	3-1/4"	2"	23.64	22.62	21.59	20.56
89550	.2500	1/4" / E	6.350	3-1/4"	2"	23.81	22.77	21.74	20.70
89555	.2559		6.500	82	50	24.39	23.33	22.27	21.21
89560	.2570	F	6.528	3-1/4"	2"	24.89	23.80	22.72	21.64
89565	.2610	G	6.629	3-1/2"	2-1/8"	25.40	24.30	23.19	22.09
89570	.2656	17/64"	6.746	3-1/2"	2-1/8"	25.91	24.78	23.66	22.53
89575	.2660	H	6.756	3-1/2"	2-1/8"	26.66	25.50	24.34	23.18
89580	.2720	I	6.909	3-1/2"	2-1/8"	26.96	25.78	24.61	23.44
89585	.2756		7.000	88	54	27.17	25.99	24.81	23.63
89590	.2770	J	7.036	3-1/2"	2-1/8"	27.42	26.22	25.03	23.84
89595	.2810	K	7.137	3-1/2"	2-1/8"	27.66	26.46	25.25	24.05
89600	.2812	9/32"	7.142	3-1/2"	2-1/8"	27.83	26.62	25.41	24.20
89605	.2900	L	7.366	3-1/2"	2-1/8"	28.83	27.58	26.32	25.07
89610	.2950	M	7.493	3-3/4"	2-3/8"	30.85	29.51	28.17	26.83
89615	.2953		7.500	95	60	30.85	29.51	28.17	26.83
89620	.2969	19/64"	7.541	3-3/4"	2-3/8"	30.85	29.51	28.17	26.83
89625	.3020	N	7.671	3-3/4"	2-3/8"	32.69	31.27	29.85	28.43
89630	.3125	5/16"	7.938	3-3/4"	2-3/8"	32.81	31.38	29.96	28.53
89635	.3150		8.000	95	60	35.20	33.67	32.14	30.61
89640	.3160	O	8.026	3-3/4"	2-3/8"	35.20	33.67	32.14	30.61
89645	.3230	P	8.204	3-3/4"	2-3/8"	35.20	33.67	32.14	30.61
89650	.3281	21/64"	8.334	4"	2-1/2"	35.73	34.18	32.62	31.07
89655	.3320	Q	8.433	4"	2-1/2"	36.56	34.97	33.38	31.79
89660	.3346		8.500	101	63	36.88	35.28	33.67	32.07

EDP#	$d^{\dagger}$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
89665	.3390	R	8.611	4"	2-1/2"	38.07	36.41	34.76	33.10
89670	.3438	11/32"	8.733	4"	2-1/2"	39.61	37.88	36.16	34.44
89675	.3480	S	8.839	4"	2-1/2"	39.74	38.02	36.29	34.56
89680	.3543		9.000	101	63	39.97	38.24	36.50	34.76
89685	.3580	T	9.093	4-1/4"	2-3/4"	40.34	38.59	36.83	35.08
89690	.3594	23/64"	9.129	4-1/4"	2-3/4"	40.62	38.85	37.09	35.32
89695	.3680	U	9.347	4-1/4"	2-3/4"	46.10	44.10	42.09	40.09
89700	.3740		9.500	107	70	46.53	44.51	42.48	40.46
89705	.3750	3/8"	9.525	4-1/4"	2-3/4"	46.90	44.86	42.82	40.78
89710	.3770	V	9.576	4-1/4"	2-3/4"	47.78	45.71	43.63	41.55
89715	.3860	W	9.804	4-1/2"	2-7/8"	48.81	46.68	44.56	42.44
89720	.3906	25/64"	9.921	4-1/2"	2-7/8"	49.53	47.38	45.22	43.07
89725	.3937		10.000	114	73	51.31	49.08	46.85	44.62
89730	.3970	X	10.084	4-1/2"	2-7/8"	52.82	50.52	48.23	45.93
89735	.4040	Y	10.262	4-1/2"	2-7/8"	53.25	50.93	48.62	46.30
89740	.4062	13/32"	10.317	4-1/2"	2-7/8"	55.17	52.77	50.37	47.97
89745	.4130	Z	10.490	4-1/2"	2-7/8"	55.75	53.33	50.90	48.48
89750	.4134		10.500	114	73	55.75	53.33	50.90	48.48
89755	.4219	27/64"	10.716	4-1/2"	2-7/8"	56.37	53.92	51.47	49.02
89760	.4331		11.000	114	73	61.21	58.55	55.89	53.23
89765	.4375	7/16"	11.113	4-1/2"	2-7/8"	61.21	58.55	55.89	53.23
89770	.4528		11.500	120	76	66.40	63.51	60.63	57.74
89775	.4531	29/64"	11.509	4-3/4"	3"	66.40	63.51	60.63	57.74
89780	.4688	15/32"	11.908	4-3/4"	3"	70.24	67.19	64.13	61.08
89785	.4724		12.000	120	76	70.47	67.41	64.34	61.28
89790	.4844	31/64"	12.304	4-3/4"	3"	70.47	67.41	64.34	61.28
89795	.4921		12.500	120	76	72.35	69.20	66.06	62.91
89800	.5000	1/2"	12.700	4-3/4"	3"	72.35	69.20	66.06	62.91
89805	.5118		13.000	127	83	90.90	86.94	82.99	79.04
89810	.5156	33/64"	13.096	5"	3-1/4"	93.33	89.28	85.22	81.16
89815	.5312	17/32"	13.492	5"	3-1/4"	95.77	91.61	87.44	83.28
89820	.5315		13.500	127	83	98.21	93.94	89.67	85.40
89825	.5469	35/64"	13.891	5"	3-1/4"	100.65	96.27	91.90	87.52
89830	.5512		14.000	127	83	103.10	98.62	94.13	89.65
89835	.5625	9/16"	14.287	5"	3-1/4"	112.42	107.54	102.65	97.76
89840	.5709		14.500	127	83	114.77	109.78	104.79	99.80
89845	.5781	37/64"	14.683	5-1/4"	3-1/2"	117.12	112.02	106.93	101.84
89850	.5906		15.000	133	89	119.50	114.30	109.11	103.91
89855	.5938	19/32"	15.082	5-1/4"	3-1/2"	120.19	114.96	109.74	104.51
89860	.6094	39/64"	15.478	5-1/4"	3-1/2"	120.85	115.60	110.34	105.09
89865	.6102		15.500	133	89	121.54	116.26	110.97	105.69
89870	.6250	5/8"	15.875	5-1/4"	3-1/2"	122.21	116.90	111.58	106.27
89875	.6299		16.000	133	89	125.48	120.02	114.57	109.11

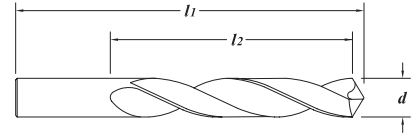
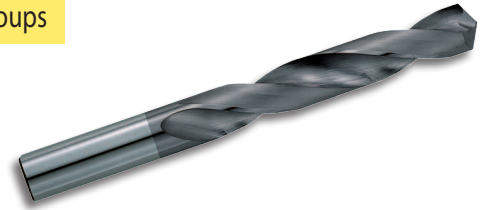
# Series 1205H

.0625" - .1575"  
(1.588mm - 4.000mm)



TOLERANCES		
$d$	+.0000" - .0005" (+.0000 - .0127mm)	
$l_1$	$\leq 1/8"$	+ .125" - .062" (+3.175 - 1.588mm)
	$> 1/8"$	+ .125" - .125" (+3.175 - 3.175mm)
$l_2$	$\leq 1/8"$	+ .125" - .062" (+3.175 - 1.588mm)
	$> 1/8"$	+ .125" - .125" (+3.175 - 3.175mm)

General purpose for all material groups



## Hardlube Coating

- Solid submicron grain carbide drill
- Excellent heat resistance and lubricity
- No spotting required in most applications
- 4-facet self-centering point
- Adaptability when converting from high-speed steel
- Live tooling recommended on lathe processes
- Uncoated - page 73

EDP#	$d$ † Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
89166	.0625	1/16"	1.588	1-3/4"	3/4"	8.71	8.33	7.95	7.57
89171	.0635	#52	1.613	1-3/4"	3/4"	8.82	8.44	8.05	7.67
89176	.0670	#51	1.702	1-3/4"	3/4"	8.92	8.54	8.15	7.76
89181	.0700	#50	1.778	1-3/4"	7/8"	9.07	8.68	8.28	7.89
89186	.0730	#49	1.854	1-3/4"	7/8"	9.28	8.88	8.47	8.07
89191	.0760	#48	1.930	1-3/4"	7/8"	9.51	9.10	8.68	8.27
89196	.0781	5/64"	1.984	1-3/4"	7/8"	9.81	9.38	8.96	8.53
89201	.0785	#47	1.994	1-3/4"	7/8"	10.07	9.64	9.20	8.76
89206	.0787		2.000	44	22	10.20	9.76	9.31	8.87
89211	.0810	#46	2.057	1-3/4"	7/8"	10.33	9.88	9.43	8.98
89216	.0820	#45	2.083	1-3/4"	7/8"	10.58	10.12	9.66	9.20
89221	.0860	#44	2.184	2"	1"	10.87	10.40	9.92	9.45
89226	.0890	#43	2.261	2"	1"	11.11	10.63	10.14	9.66
89231	.0935	#42	2.375	2"	1"	11.25	10.76	10.27	9.78
89236	.0938	3/32"	2.383	2"	1"	11.45	10.96	10.46	9.96
89241	.0960	#41	2.438	2"	1"	11.56	11.06	10.55	10.05
89246	.0980	#40	2.489	2"	1"	11.70	11.19	10.68	10.17
89251	.0984		2.500	57	32	11.72	11.21	10.70	10.19
89256	.0995	#39	2.527	2-1/4"	1-1/4"	11.78	11.26	10.75	10.24
89261	.1015	#38	2.578	2-1/4"	1-1/4"	11.91	11.40	10.88	10.36
89266	.1040	#37	2.642	2-1/4"	1-1/4"	12.02	11.50	10.97	10.45
89271	.1065	#36	2.705	2-1/4"	1-1/4"	12.16	11.63	11.10	10.57
89276	.1094	7/64"	2.779	2-1/4"	1-1/4"	12.34	11.80	11.27	10.73
89281	.1100	#35	2.794	2-1/4"	1-1/4"	12.44	11.90	11.36	10.82
89286	.1110	#34	2.819	2-1/4"	1-1/4"	12.57	12.02	11.48	10.93
89291	.1130	#33	2.870	2-1/4"	1-1/4"	12.77	12.21	11.66	11.10
89296	.1160	#32	2.946	2-1/4"	1-1/4"	12.87	12.31	11.75	11.19
89301	.1181		3.000	57	32	12.98	12.42	11.85	11.29
89306	.1200	#31	3.048	2-1/4"	1-1/4"	13.08	12.51	11.94	11.37
89311	.1250	1/8"	3.175	2-1/4"	1-1/4"	13.19	12.62	12.04	11.47
89316	.1285	#30	3.264	2-1/4"	1-1/4"	13.49	12.90	12.32	11.73
89321	.1360	#29	3.454	2-1/2"	1-3/8"	13.85	13.24	12.64	12.04
89326	.1378		3.500	63	35	14.23	13.61	12.99	12.37
89331	.1405	#28	3.569	2-1/2"	1-3/8"	14.38	13.75	13.13	12.50
89336	.1406	9/64"	3.571	2-1/2"	1-3/8"	14.51	13.88	13.25	12.62
89341	.1440	#27	3.658	2-1/2"	1-3/8"	15.01	14.36	13.70	13.05
89346	.1470	#26	3.734	2-1/2"	1-3/8"	15.15	14.49	13.83	13.17
89351	.1495	#25	3.797	2-1/2"	1-3/8"	15.28	14.62	13.95	13.29
89356	.1520	#24	3.861	2-1/2"	1-3/8"	15.35	14.69	14.02	13.35
89361	.1540	#23	3.912	2-1/2"	1-3/8"	15.43	14.76	14.09	13.42
89366	.1562	5/32"	3.967	2-1/2"	1-3/8"	15.50	14.83	14.15	13.48
89371	.1570	#22	3.988	2-1/2"	1-3/8"	16.36	15.65	14.94	14.23
89376	.1575		4.000	63	35	16.55	15.83	15.11	14.39

EDP#	$d^{\dagger}$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
89381	.1590	#21	4.039	2-1/2"	1-3/8"	16.73	16.01	15.28	14.55
89386	.1610	#20	4.089	2-1/2"	1-3/8"	16.84	16.10	15.37	14.64
89391	.1660	#19	4.216	2-3/4"	1-5/8"	17.45	16.69	15.93	15.17
89396	.1695	#18	4.305	2-3/4"	1-5/8"	17.62	16.85	16.09	15.32
89401	.1719	11/64"	4.366	2-3/4"	1-5/8"	17.93	17.15	16.37	15.59
89406	.1730	#17	4.394	2-3/4"	1-5/8"	18.19	17.40	16.61	15.82
89411	.1770	#16	4.496	2-3/4"	1-5/8"	18.34	17.55	16.75	15.95
89416	.1772		4.500	70	41	18.45	17.64	16.84	16.04
89421	.1800	#15	4.572	2-3/4"	1-5/8"	18.52	17.71	16.91	16.10
89426	.1820	#14	4.623	2-3/4"	1-5/8"	18.88	18.06	17.24	16.42
89431	.1850	#13	4.700	2-3/4"	1-5/8"	19.02	18.19	17.37	16.54
89436	.1875	3/16"	4.763	2-3/4"	1-5/8"	19.10	18.27	17.44	16.61
89441	.1890	#12	4.801	2-3/4"	1-5/8"	21.05	20.13	19.22	18.30
89446	.1910	#11	4.851	2-3/4"	1-5/8"	21.24	20.32	19.39	18.47
89451	.1935	#10	4.915	2-3/4"	1-5/8"	22.07	21.11	20.15	19.19
89456	.1960	#9	4.978	3"	1-3/4"	22.56	21.58	20.60	19.62
89461	.1969		5.000	76	44	22.67	21.68	20.70	19.71
89466	.1990	#8	5.055	3"	1-3/4"	22.77	21.78	20.79	19.80
89471	.2010	#7	5.105	3"	1-3/4"	23.37	22.35	21.34	20.32
89476	.2031	13/64"	5.159	3"	1-3/4"	23.52	22.50	21.47	20.45
89481	.2040	#6	5.182	3"	1-3/4"	23.94	22.90	21.86	20.82
89486	.2055	#5	5.220	3"	1-3/4"	24.36	23.30	22.24	21.18
89491	.2090	#4	5.309	3"	1-3/4"	24.75	23.67	22.60	21.52
89496	.2130	#3	5.410	3"	1-3/4"	25.10	24.01	22.92	21.83
89501	.2165		5.500	76	44	25.27	24.17	23.07	21.97
89506	.2188	7/32"	5.558	3"	1-3/4"	25.42	24.31	23.21	22.10
89511	.2210	#2	5.613	3"	1-3/4"	25.94	24.82	23.69	22.56
89516	.2280	#1	5.791	3"	1-3/4"	26.11	24.97	23.84	22.70
89521	.2340	A	5.944	3-1/4"	2"	26.47	25.32	24.17	23.02
89526	.2344	15/64"	5.954	3-1/4"	2"	26.55	25.40	24.24	23.09
89531	.2362		6.000	82	50	26.63	25.48	24.32	23.16
89536	.2380	B	6.045	3-1/4"	2"	26.71	25.55	24.39	23.23
89541	.2420	C	6.147	3-1/4"	2"	26.89	25.72	24.55	23.38
89546	.2460	D	6.248	3-1/4"	2"	27.07	25.89	24.72	23.54
89551	.2500	1/4" / E	6.350	3-1/4"	2"	27.22	26.04	24.85	23.67
89556	.2559		6.500	82	50	30.65	29.32	27.98	26.65
89561	.2570	F	6.528	3-1/4"	2"	31.18	29.82	28.47	27.11
89566	.2610	G	6.629	3-1/2"	2-1/8"	31.65	30.27	28.90	27.52
89571	.2656	17/64"	6.746	3-1/2"	2-1/8"	32.18	30.78	29.38	27.98
89576	.2660	H	6.756	3-1/2"	2-1/8"	32.91	31.48	30.05	28.62
89581	.2720	I	6.909	3-1/2"	2-1/8"	33.22	31.78	30.33	28.89
89586	.2756		7.000	88	54	33.43	31.98	30.52	29.07
89591	.2770	J	7.036	3-1/2"	2-1/8"	33.67	32.21	30.74	29.28
89596	.2810	K	7.137	3-1/2"	2-1/8"	33.93	32.45	30.98	29.50
89601	.2812	9/32"	7.142	3-1/2"	2-1/8"	34.06	32.58	31.10	29.62
89606	.2900	L	7.366	3-1/2"	2-1/8"	35.10	33.57	32.05	30.52
89611	.2950	M	7.493	3-3/4"	2-3/8"	37.11	35.50	33.88	32.27
89616	.2953		7.500	95	60	37.11	35.50	33.88	32.27
89621	.2969	19/64"	7.541	3-3/4"	2-3/8"	37.11	35.50	33.88	32.27
89626	.3020	N	7.671	3-3/4"	2-3/8"	38.95	37.26	35.56	33.87
89631	.3125	5/16"	7.938	3-3/4"	2-3/8"	39.09	37.39	35.69	33.99
89636	.3150		8.000	95	60	41.46	39.66	37.85	36.05
89641	.3160	O	8.026	3-3/4"	2-3/8"	41.46	39.66	37.85	36.05
89646	.3230	P	8.204	3-3/4"	2-3/8"	41.46	39.66	37.85	36.05
89651	.3281	21/64"	8.334	4"	2-1/2"	41.98	40.15	38.33	36.50
89656	.3320	Q	8.433	4"	2-1/2"	42.83	40.96	39.10	37.24
89661	.3346		8.500	101	63	43.13	41.25	39.38	37.50

continued →

# Series 1205H (continued)

.3390" - .6299"  
(8.611mm - 16.000mm)

DRILLS

EDP#	$d^{\dagger}$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
89666	.3390	R	8.611	4"	2-1/2"	44.31	42.38	40.46	38.53
89671	.3438	11/32"	8.733	4"	2-1/2"	45.86	43.87	41.87	39.88
89676	.3480	S	8.839	4"	2-1/2"	47.68	45.61	43.53	41.46
89681	.3543		9.000	101	63	47.94	45.86	43.77	41.69
89686	.3580	T	9.093	4-1/4"	2-3/4"	49.84	47.67	45.51	43.34
89691	.3594	23/64"	9.129	4-1/4"	2-3/4"	50.15	47.97	45.79	43.61
89696	.3680	U	9.347	4-1/4"	2-3/4"	55.64	53.22	50.80	48.38
89701	.3740		9.500	107	70	56.04	53.60	51.17	48.73
89706	.3750	3/8"	9.525	4-1/4"	2-3/4"	56.42	53.97	51.51	49.06
89711	.3770	V	9.576	4-1/4"	2-3/4"	57.80	55.29	52.77	50.26
89716	.3860	W	9.804	4-1/2"	2-7/8"	58.82	56.27	53.71	51.15
89721	.3906	25/64"	9.921	4-1/2"	2-7/8"	59.54	56.95	54.36	51.77
89726	.3937		10.000	114	73	61.33	58.66	56.00	53.33
89731	.3970	X	10.084	4-1/2"	2-7/8"	62.82	60.09	57.36	54.63
89736	.4040	Y	10.262	4-1/2"	2-7/8"	63.25	60.50	57.75	55.00
89741	.4062	13/32"	10.317	4-1/2"	2-7/8"	65.18	62.35	59.51	56.68
89746	.4130	Z	10.490	4-1/2"	2-7/8"	65.78	62.92	60.06	57.20
89751	.4134		10.500	114	73	65.78	62.92	60.06	57.20
89756	.4219	27/64"	10.716	4-1/2"	2-7/8"	66.39	63.50	60.62	57.73
89761	.4331		11.000	114	73	71.22	68.12	65.03	61.93
89766	.4375	7/16"	11.113	4-1/2"	2-7/8"	71.22	68.12	65.03	61.93
89771	.4528		11.500	120	76	76.42	73.10	69.77	66.45
89776	.4531	29/64"	11.509	4-3/4"	3"	76.42	73.10	69.77	66.45
89781	.4688	15/32"	11.908	4-3/4"	3"	80.25	76.76	73.27	69.78
89786	.4724		12.000	120	76	80.49	76.99	73.49	69.99
89791	.4844	31/64"	12.304	4-3/4"	3"	80.49	76.99	73.49	69.99
89796	.4921		12.500	120	76	82.36	78.78	75.20	71.62
89801	.5000	1/2"	12.700	4-3/4"	3"	82.36	78.78	75.20	71.62
89806	.5118		13.000	127	83	103.65	99.14	94.64	90.13
89811	.5156	33/64"	13.096	5"	3-1/4"	106.09	101.48	96.86	92.25
89816	.5312	17/32"	13.492	5"	3-1/4"	108.53	103.81	99.09	94.37
89821	.5315		13.500	127	83	110.96	106.14	101.31	96.49
89826	.5469	35/64"	13.891	5"	3-1/4"	113.39	108.46	103.53	98.60
89831	.5512		14.000	127	83	115.85	110.81	105.78	100.74
89836	.5625	9/16"	14.287	5"	3-1/4"	125.18	119.74	114.29	108.85
89841	.5709		14.500	127	83	127.51	121.97	116.42	110.88
89846	.5781	37/64"	14.683	5-1/4"	3-1/2"	129.87	124.22	118.58	112.93
89851	.5906		15.000	133	89	132.24	126.49	120.74	114.99
89856	.5938	19/32"	15.082	5-1/4"	3-1/2"	132.95	127.17	121.39	115.61
89861	.6094	39/64"	15.478	5-1/4"	3-1/2"	133.61	127.80	121.99	116.18
89866	.6102		15.500	133	89	134.30	128.46	122.62	116.78
89871	.6250	5/8"	15.875	5-1/4"	3-1/2"	134.98	129.11	123.24	117.37
89876	.6299		16.000	133	89	138.23	132.22	126.21	120.20

**TOLERANCES**

<i>d</i>	+.0000" - .0005" (+.0000 - .0127mm)	
<i>l1</i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)
<i>l2</i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)

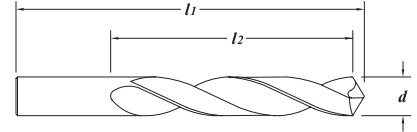


**Series 1200**

.0625" - .1575"  
(1.588mm - 4.000mm)

**DRILLS**

Solid submicron grain carbide drill  
 General purpose jobber style  
 Cam point (≤1/8" diameter - 4-facet point)  
 Live tooling recommended on lathe processes  
 Hardlube Coating - page 82



EDP#	<i>d</i> <sup>†</sup> Diameter		<i>l1</i> Overall Length	<i>l2</i> Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
56165	.0625	1/16"	1.588	1-3/4"	3/4"	6.79	6.49	6.20	5.90
56170	.0635	#52	1.613	1-3/4"	3/4"	6.89	6.59	6.29	5.99
56175	.0670	#51	1.702	1-3/4"	3/4"	6.99	6.69	6.38	6.08
56180	.0700	#50	1.778	1-3/4"	7/8"	7.16	6.85	6.54	6.23
56185	.0730	#49	1.854	1-3/4"	7/8"	7.35	7.03	6.71	6.39
56190	.0760	#48	1.930	1-3/4"	7/8"	7.59	7.26	6.93	6.60
56195	.0781	5/64"	1.984	1-3/4"	7/8"	7.88	7.54	7.19	6.85
56200	.0785	#47	1.994	1-3/4"	7/8"	8.14	7.79	7.43	7.08
56205	.0787		2.000	44	22	8.27	7.91	7.55	7.19
56210	.0810	#46	2.057	1-3/4"	7/8"	8.40	8.03	7.67	7.30
56215	.0820	#45	2.083	1-3/4"	7/8"	8.65	8.27	7.90	7.52
56220	.0860	#44	2.184	2"	1"	8.94	8.55	8.16	7.77
56225	.0890	#43	2.261	2"	1"	9.19	8.79	8.39	7.99
56230	.0935	#42	2.375	2"	1"	9.32	8.91	8.51	8.10
56235	.0938	3/32"	2.383	2"	1"	9.53	9.12	8.70	8.29
56240	.0960	#41	2.438	2"	1"	9.61	9.20	8.78	8.36
56245	.0980	#40	2.489	2"	1"	9.76	9.34	8.91	8.49
56250	.0984		2.500	57	32	9.81	9.38	8.96	8.53
56255	.0995	#39	2.527	2-1/4"	1-1/4"	9.86	9.43	9.00	8.57
56260	.1015	#38	2.578	2-1/4"	1-1/4"	9.98	9.55	9.11	8.68
56265	.1040	#37	2.642	2-1/4"	1-1/4"	10.11	9.67	9.23	8.79
56270	.1065	#36	2.705	2-1/4"	1-1/4"	10.24	9.79	9.35	8.90
56275	.1094	7/64"	2.779	2-1/4"	1-1/4"	10.41	9.96	9.50	9.05
56280	.1100	#35	2.794	2-1/4"	1-1/4"	10.52	10.07	9.61	9.15
56285	.1110	#34	2.819	2-1/4"	1-1/4"	10.65	10.19	9.72	9.26
56290	.1130	#33	2.870	2-1/4"	1-1/4"	10.84	10.37	9.90	9.43
56295	.1160	#32	2.946	2-1/4"	1-1/4"	10.96	10.48	10.01	9.53
56300	.1181		3.000	57	32	11.07	10.59	10.11	9.63
56305	.1200	#31	3.048	2-1/4"	1-1/4"	11.14	10.66	10.17	9.69
56310	.1250	1/8"	3.175	2-1/4"	1-1/4"	11.28	10.79	10.30	9.81
56315	.1285	#30	3.264	2-1/4"	1-1/4"	11.57	11.07	10.56	10.06
56320	.1360	#29	3.454	2-1/2"	1-3/8"	11.93	11.41	10.89	10.37
56325	.1378		3.500	63	35	12.32	11.78	11.25	10.71
56330	.1405	#28	3.569	2-1/2"	1-3/8"	12.44	11.90	11.36	10.82
56335	.1406	9/64"	3.571	2-1/2"	1-3/8"	12.58	12.03	11.49	10.94
56340	.1440	#27	3.658	2-1/2"	1-3/8"	13.08	12.51	11.94	11.37
56345	.1470	#26	3.734	2-1/2"	1-3/8"	13.21	12.64	12.06	11.49
56350	.1495	#25	3.797	2-1/2"	1-3/8"	13.39	12.80	12.22	11.64
56355	.1520	#24	3.861	2-1/2"	1-3/8"	13.41	12.83	12.24	11.66
56360	.1540	#23	3.912	2-1/2"	1-3/8"	13.50	12.91	12.33	11.74
56365	.1562	5/32"	3.967	2-1/2"	1-3/8"	13.59	13.00	12.41	11.82
56370	.1570	#22	3.988	2-1/2"	1-3/8"	14.44	13.82	13.19	12.56
56375	.1575		4.000	63	35	14.63	13.99	13.36	12.72

continued →

## Series 1200 (continued)

.1590" - .3346"  
(4.039mm - 8.500mm)

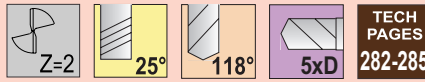
EDP#	$d^{\dagger}$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
56380	.1590	#21	4.039	2-1/2"	1-3/8"	14.80	14.16	13.51	12.87
56385	.1610	#20	4.089	2-1/2"	1-3/8"	14.90	14.26	13.61	12.96
56390	.1660	#19	4.216	2-3/4"	1-5/8"	15.51	14.84	14.16	13.49
56395	.1695	#18	4.305	2-3/4"	1-5/8"	15.71	15.03	14.34	13.66
56400	.1719	11/64"	4.366	2-3/4"	1-5/8"	16.03	15.33	14.64	13.94
56405	.1730	#17	4.394	2-3/4"	1-5/8"	16.25	15.54	14.84	14.13
56410	.1770	#16	4.496	2-3/4"	1-5/8"	16.43	15.72	15.00	14.29
56415	.1772		4.500	70	41	16.51	15.80	15.08	14.36
56420	.1800	#15	4.572	2-3/4"	1-5/8"	16.58	15.86	15.14	14.42
56425	.1820	#14	4.623	2-3/4"	1-5/8"	16.96	16.23	15.49	14.75
56430	.1850	#13	4.700	2-3/4"	1-5/8"	17.10	16.36	15.61	14.87
56435	.1875	3/16"	4.763	2-3/4"	1-5/8"	17.17	16.42	15.68	14.93
56440	.1890	#12	4.801	2-3/4"	1-5/8"	17.73	16.96	16.19	15.42
56445	.1910	#11	4.851	2-3/4"	1-5/8"	17.93	17.15	16.37	15.59
56450	.1935	#10	4.915	2-3/4"	1-5/8"	18.78	17.96	17.15	16.33
56455	.1960	#9	4.978	3"	1-3/4"	19.25	18.41	17.58	16.74
56460	.1969		5.000	76	44	19.37	18.52	17.68	16.84
56465	.1990	#8	5.055	3"	1-3/4"	19.49	18.65	17.80	16.95
56470	.2010	#7	5.105	3"	1-3/4"	20.07	19.20	18.32	17.45
56475	.2031	13/64"	5.159	3"	1-3/4"	20.22	19.34	18.46	17.58
56480	.2040	#6	5.182	3"	1-3/4"	20.63	19.73	18.84	17.94
56485	.2055	#5	5.220	3"	1-3/4"	21.06	20.14	19.23	18.31
56490	.2090	#4	5.309	3"	1-3/4"	21.42	20.49	19.56	18.63
56495	.2130	#3	5.410	3"	1-3/4"	21.79	20.85	19.90	18.95
56500	.2165		5.500	76	44	21.97	21.01	20.06	19.10
56505	.2188	7/32"	5.558	3"	1-3/4"	22.13	21.16	20.20	19.24
56510	.2210	#2	5.613	3"	1-3/4"	22.67	21.68	20.70	19.71
56515	.2280	#1	5.791	3"	1-3/4"	22.80	21.81	20.82	19.83
56520	.2340	A	5.944	3-1/4"	2"	23.07	22.07	21.06	20.06
56525	.2344	15/64"	5.954	3-1/4"	2"	23.13	22.12	21.12	20.11
56530	.2362		6.000	82	50	23.22	22.21	21.20	20.19
56535	.2380	B	6.045	3-1/4"	2"	23.30	22.29	21.27	20.26
56540	.2420	C	6.147	3-1/4"	2"	23.47	22.45	21.43	20.41
56545	.2460	D	6.248	3-1/4"	2"	23.64	22.62	21.59	20.56
56550	.2500	1/4" / E	6.350	3-1/4"	2"	23.81	22.77	21.74	20.70
56555	.2559		6.500	82	50	24.39	23.33	22.27	21.21
56560	.2570	F	6.528	3-1/4"	2"	24.89	23.80	22.72	21.64
56565	.2610	G	6.629	3-1/2"	2-1/8"	25.40	24.30	23.19	22.09
56570	.2656	17/64"	6.746	3-1/2"	2-1/8"	25.91	24.78	23.66	22.53
56575	.2660	H	6.756	3-1/2"	2-1/8"	26.66	25.50	24.34	23.18
56580	.2720	I	6.909	3-1/2"	2-1/8"	26.96	25.78	24.61	23.44
56585	.2756		7.000	88	54	27.17	25.99	24.81	23.63
56590	.2770	J	7.036	3-1/2"	2-1/8"	27.42	26.22	25.03	23.84
56595	.2810	K	7.137	3-1/2"	2-1/8"	27.66	26.46	25.25	24.05
56600	.2812	9/32"	7.142	3-1/2"	2-1/8"	27.83	26.62	25.41	24.20
56605	.2900	L	7.366	3-1/2"	2-1/8"	28.83	27.58	26.32	25.07
56610	.2950	M	7.493	3-3/4"	2-3/8"	30.85	29.51	28.17	26.83
56615	.2953		7.500	95	60	30.85	29.51	28.17	26.83
56620	.2969	19/64"	7.541	3-3/4"	2-3/8"	30.85	29.51	28.17	26.83
56625	.3020	N	7.671	3-3/4"	2-3/8"	32.69	31.27	29.85	28.43
56630	.3125	5/16"	7.938	3-3/4"	2-3/8"	32.81	31.38	29.96	28.53
56635	.3150		8.000	95	60	35.20	33.67	32.14	30.61
56640	.3160	O	8.026	3-3/4"	2-3/8"	35.20	33.67	32.14	30.61
56645	.3230	P	8.204	3-3/4"	2-3/8"	35.20	33.67	32.14	30.61
56650	.3281	21/64"	8.334	4"	2-1/2"	35.73	34.18	32.62	31.07
56655	.3320	Q	8.433	4"	2-1/2"	36.56	34.97	33.38	31.79
56660	.3346		8.500	101	63	36.88	35.28	33.67	32.07

EDP#	$d^+$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
56665	.3390	R	8.611	4"	2-1/2"	38.07	36.41	34.76	33.10
56670	.3438	11/32"	8.733	4"	2-1/2"	39.61	37.88	36.16	34.44
56675	.3480	S	8.839	4"	2-1/2"	39.74	38.02	36.29	34.56
56680	.3543		9.000	101	63	39.97	38.24	36.50	34.76
56685	.3580	T	9.093	4-1/4"	2-3/4"	40.34	38.59	36.83	35.08
56690	.3594	23/64"	9.129	4-1/4"	2-3/4"	40.62	38.85	37.09	35.32
56695	.3680	U	9.347	4-1/4"	2-3/4"	46.10	44.10	42.09	40.09
56700	.3740		9.500	107	70	46.53	44.51	42.48	40.46
56705	.3750	3/8"	9.525	4-1/4"	2-3/4"	46.90	44.86	42.82	40.78
56710	.3770	V	9.576	4-1/4"	2-3/4"	47.78	45.71	43.63	41.55
56715	.3860	W	9.804	4-1/2"	2-7/8"	48.81	46.68	44.56	42.44
56720	.3906	25/64"	9.921	4-1/2"	2-7/8"	49.53	47.38	45.22	43.07
56725	.3937		10.000	114	73	51.31	49.08	46.85	44.62
56730	.3970	X	10.084	4-1/2"	2-7/8"	52.82	50.52	48.23	45.93
56735	.4040	Y	10.262	4-1/2"	2-7/8"	53.25	50.93	48.62	46.30
56740	.4062	13/32"	10.317	4-1/2"	2-7/8"	55.17	52.77	50.37	47.97
56745	.4130	Z	10.490	4-1/2"	2-7/8"	55.75	53.33	50.90	48.48
56750	.4134		10.500	114	73	55.75	53.33	50.90	48.48
56755	.4219	27/64"	10.716	4-1/2"	2-7/8"	56.37	53.92	51.47	49.02
56760	.4331		11.000	114	73	61.21	58.55	55.89	53.23
56765	.4375	7/16"	11.113	4-1/2"	2-7/8"	61.21	58.55	55.89	53.23
56770	.4528		11.500	120	76	66.40	63.51	60.63	57.74
56775	.4531	29/64"	11.509	4-3/4"	3"	66.40	63.51	60.63	57.74
56780	.4688	15/32"	11.908	4-3/4"	3"	70.24	67.19	64.13	61.08
56785	.4724		12.000	120	76	70.47	67.41	64.34	61.28
56790	.4844	31/64"	12.304	4-3/4"	3"	70.47	67.41	64.34	61.28
56795	.4921		12.500	120	76	72.35	69.20	66.06	62.91
56800	.5000	1/2"	12.700	4-3/4"	3"	72.35	69.20	66.06	62.91

*Drill Manufacturing*

# Series 1200H

.0625" - .1575"  
(1.588mm - 4.000mm)

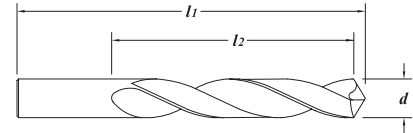
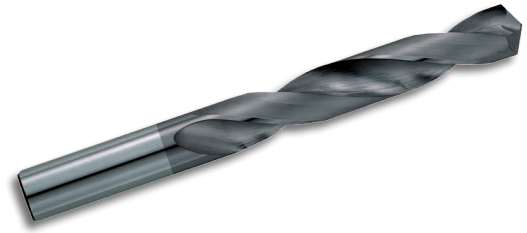


TOLERANCES		
<i>d</i>	+.0000" - .0005" (+.0000 - .0127mm)	
<i>l1</i>	≤ 1/8"	+ .125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+ .125" - .125" (+3.175 - 3.175mm)
<i>l2</i>	≤ 1/8"	+ .125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+ .125" - .125" (+3.175 - 3.175mm)

DRILLS

## Hardlube Coating

- Solid submicron grain carbide drill
- General purpose jobber style
- Excellent heat resistance and lubricity
- Cam point (≤ 1/8" diameter is with 4-facet point)
- Live tooling recommended on lathe processes
- Uncoated - page 79



EDP#	<i>d</i> † Diameter		<i>l1</i> Overall Length	<i>l2</i> Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
56166	.0625	1/16"	1.588	1-3/4"	3/4"	8.71	8.33	7.95	7.57
56171	.0635	#52	1.613	1-3/4"	3/4"	8.82	8.44	8.05	7.67
56176	.0670	#51	1.702	1-3/4"	3/4"	8.92	8.54	8.15	7.76
56181	.0700	#50	1.778	1-3/4"	7/8"	9.07	8.68	8.28	7.89
56186	.0730	#49	1.854	1-3/4"	7/8"	9.28	8.88	8.47	8.07
56191	.0760	#48	1.930	1-3/4"	7/8"	9.51	9.10	8.68	8.27
56196	.0781	5/64"	1.984	1-3/4"	7/8"	9.81	9.38	8.96	8.53
56201	.0785	#47	1.994	1-3/4"	7/8"	10.07	9.64	9.20	8.76
56206	.0787		2.000	44	22	10.20	9.76	9.31	8.87
56211	.0810	#46	2.057	1-3/4"	7/8"	10.33	9.88	9.43	8.98
56216	.0820	#45	2.083	1-3/4"	7/8"	10.58	10.12	9.66	9.20
56221	.0860	#44	2.184	2"	1"	10.87	10.40	9.92	9.45
56226	.0890	#43	2.261	2"	1"	11.11	10.63	10.14	9.66
56231	.0935	#42	2.375	2"	1"	11.25	10.76	10.27	9.78
56236	.0938	3/32"	2.383	2"	1"	11.45	10.96	10.46	9.96
56241	.0960	#41	2.438	2"	1"	11.56	11.06	10.55	10.05
56246	.0980	#40	2.489	2"	1"	11.70	11.19	10.68	10.17
56251	.0984		2.500	57	32	11.72	11.21	10.70	10.19
56256	.0995	#39	2.527	2-1/4"	1-1/4"	11.78	11.26	10.75	10.24
56261	.1015	#38	2.578	2-1/4"	1-1/4"	11.91	11.40	10.88	10.36
56266	.1040	#37	2.642	2-1/4"	1-1/4"	12.02	11.50	10.97	10.45
56271	.1065	#36	2.705	2-1/4"	1-1/4"	12.16	11.63	11.10	10.57
56276	.1094	7/64"	2.779	2-1/4"	1-1/4"	12.34	11.80	11.27	10.73
56281	.1100	#35	2.794	2-1/4"	1-1/4"	12.44	11.90	11.36	10.82
56286	.1110	#34	2.819	2-1/4"	1-1/4"	12.57	12.02	11.48	10.93
56291	.1130	#33	2.870	2-1/4"	1-1/4"	12.77	12.21	11.66	11.10
56296	.1160	#32	2.946	2-1/4"	1-1/4"	12.87	12.31	11.75	11.19
56301	.1181		3.000	57	32	12.98	12.42	11.85	11.29
56306	.1200	#31	3.048	2-1/4"	1-1/4"	13.08	12.51	11.94	11.37
56311	.1250	1/8"	3.175	2-1/4"	1-1/4"	13.19	12.62	12.04	11.47
56316	.1285	#30	3.264	2-1/4"	1-1/4"	13.49	12.90	12.32	11.73
56321	.1360	#29	3.454	2-1/2"	1-3/8"	13.85	13.24	12.64	12.04
56326	.1378		3.500	63	35	14.23	13.61	12.99	12.37
56331	.1405	#28	3.569	2-1/2"	1-3/8"	14.38	13.75	13.13	12.50
56336	.1406	9/64"	3.571	2-1/2"	1-3/8"	14.51	13.88	13.25	12.62
56341	.1440	#27	3.658	2-1/2"	1-3/8"	15.01	14.36	13.70	13.05
56346	.1470	#26	3.734	2-1/2"	1-3/8"	15.15	14.49	13.83	13.17
56351	.1495	#25	3.797	2-1/2"	1-3/8"	15.28	14.62	13.95	13.29
56356	.1520	#24	3.861	2-1/2"	1-3/8"	15.35	14.69	14.02	13.35
56361	.1540	#23	3.912	2-1/2"	1-3/8"	15.43	14.76	14.09	13.42
56366	.1562	5/32"	3.967	2-1/2"	1-3/8"	15.50	14.83	14.15	13.48
56371	.1570	#22	3.988	2-1/2"	1-3/8"	16.36	15.65	14.94	14.23
56376	.1575		4.000	63	35	16.55	15.83	15.11	14.39

EDP#	$d^{\dagger}$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
56381	.1590	#21	4.039	2-1/2"	1-3/8"	16.73	16.01	15.28	14.55
56386	.1610	#20	4.089	2-1/2"	1-3/8"	16.84	16.10	15.37	14.64
56391	.1660	#19	4.216	2-3/4"	1-5/8"	17.45	16.69	15.93	15.17
56396	.1695	#18	4.305	2-3/4"	1-5/8"	17.62	16.85	16.09	15.32
56401	.1719	11/64"	4.366	2-3/4"	1-5/8"	17.93	17.15	16.37	15.59
56406	.1730	#17	4.394	2-3/4"	1-5/8"	18.19	17.40	16.61	15.82
56411	.1770	#16	4.496	2-3/4"	1-5/8"	18.34	17.55	16.75	15.95
56416	.1772		4.500	70	41	18.45	17.64	16.84	16.04
56421	.1800	#15	4.572	2-3/4"	1-5/8"	18.52	17.71	16.91	16.10
56426	.1820	#14	4.623	2-3/4"	1-5/8"	18.88	18.06	17.24	16.42
56431	.1850	#13	4.700	2-3/4"	1-5/8"	19.02	18.19	17.37	16.54
56436	.1875	3/16"	4.763	2-3/4"	1-5/8"	19.10	18.27	17.44	16.61
56441	.1890	#12	4.801	2-3/4"	1-5/8"	21.05	20.13	19.22	18.30
56446	.1910	#11	4.851	2-3/4"	1-5/8"	21.24	20.32	19.39	18.47
56451	.1935	#10	4.915	2-3/4"	1-5/8"	22.07	21.11	20.15	19.19
56456	.1960	#9	4.978	3"	1-3/4"	22.56	21.58	20.60	19.62
56461	.1969		5.000	76	44	22.67	21.68	20.70	19.71
56466	.1990	#8	5.055	3"	1-3/4"	22.77	21.78	20.79	19.80
56471	.2010	#7	5.105	3"	1-3/4"	23.37	22.35	21.34	20.32
56476	.2031	13/64"	5.159	3"	1-3/4"	23.52	22.50	21.47	20.45
56481	.2040	#6	5.182	3"	1-3/4"	23.94	22.90	21.86	20.82
56486	.2055	#5	5.220	3"	1-3/4"	24.36	23.30	22.24	21.18
56491	.2090	#4	5.309	3"	1-3/4"	24.75	23.67	22.60	21.52
56496	.2130	#3	5.410	3"	1-3/4"	25.10	24.01	22.92	21.83
56501	.2165		5.500	76	44	25.27	24.17	23.07	21.97
56506	.2188	7/32"	5.558	3"	1-3/4"	25.42	24.31	23.21	22.10
56511	.2210	#2	5.613	3"	1-3/4"	25.94	24.82	23.69	22.56
56516	.2280	#1	5.791	3"	1-3/4"	26.11	24.97	23.84	22.70
56521	.2340	A	5.944	3-1/4"	2"	26.47	25.32	24.17	23.02
56526	.2344	15/64"	5.954	3-1/4"	2"	26.55	25.40	24.24	23.09
56531	.2362		6.000	82	50	26.63	25.48	24.32	23.16
56536	.2380	B	6.045	3-1/4"	2"	26.71	25.55	24.39	23.23
56541	.2420	C	6.147	3-1/4"	2"	26.89	25.72	24.55	23.38
56546	.2460	D	6.248	3-1/4"	2"	27.07	25.89	24.72	23.54
56551	.2500	1/4" / E	6.350	3-1/4"	2"	27.22	26.04	24.85	23.67
56556	.2559		6.500	82	50	30.65	29.32	27.98	26.65
56561	.2570	F	6.528	3-1/4"	2"	31.18	29.82	28.47	27.11
56566	.2610	G	6.629	3-1/2"	2-1/8"	31.65	30.27	28.90	27.52
56571	.2656	17/64"	6.746	3-1/2"	2-1/8"	32.18	30.78	29.38	27.98
56576	.2660	H	6.756	3-1/2"	2-1/8"	32.91	31.48	30.05	28.62
56581	.2720	I	6.909	3-1/2"	2-1/8"	33.22	31.78	30.33	28.89
56586	.2756		7.000	88	54	33.43	31.98	30.52	29.07
56591	.2770	J	7.036	3-1/2"	2-1/8"	33.67	32.21	30.74	29.28
56596	.2810	K	7.137	3-1/2"	2-1/8"	33.93	32.45	30.98	29.50
56601	.2812	9/32"	7.142	3-1/2"	2-1/8"	34.06	32.58	31.10	29.62
56606	.2900	L	7.366	3-1/2"	2-1/8"	35.10	33.57	32.05	30.52
56611	.2950	M	7.493	3-3/4"	2-3/8"	37.11	35.50	33.88	32.27
56616	.2953		7.500	95	60	37.11	35.50	33.88	32.27
56621	.2969	19/64"	7.541	3-3/4"	2-3/8"	37.11	35.50	33.88	32.27
56626	.3020	N	7.671	3-3/4"	2-3/8"	38.95	37.26	35.56	33.87
56631	.3125	5/16"	7.938	3-3/4"	2-3/8"	39.09	37.39	35.69	33.99
56636	.3150		8.000	95	60	41.46	39.66	37.85	36.05
56641	.3160	O	8.026	3-3/4"	2-3/8"	41.46	39.66	37.85	36.05
56646	.3230	P	8.204	3-3/4"	2-3/8"	41.46	39.66	37.85	36.05
56651	.3281	21/64"	8.334	4"	2-1/2"	41.98	40.15	38.33	36.50
56656	.3320	Q	8.433	4"	2-1/2"	42.83	40.96	39.10	37.24
56661	.3346		8.500	101	63	43.13	41.25	39.38	37.50

continued →

Series 1200H (continued)

.3390" - .5000"  
(8.611mm - 12.700mm)

EDP#	$d^{\dagger}$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
56666	.3390	R	8.611	4"	2-1/2"	44.31	42.38	40.46	38.53
56671	.3438	11/32"	8.733	4"	2-1/2"	45.86	43.87	41.87	39.88
56676	.3480	S	8.839	4"	2-1/2"	47.68	45.61	43.53	41.46
56681	.3543		9.000	101	63	47.94	45.86	43.77	41.69
56686	.3580	T	9.093	4-1/4"	2-3/4"	49.84	47.67	45.51	43.34
56691	.3594	23/64"	9.129	4-1/4"	2-3/4"	50.15	47.97	45.79	43.61
56696	.3680	U	9.347	4-1/4"	2-3/4"	55.64	53.22	50.80	48.38
56701	.3740		9.500	107	70	56.04	53.60	51.17	48.73
56706	.3750	3/8"	9.525	4-1/4"	2-3/4"	56.42	53.97	51.51	49.06
56711	.3770	V	9.576	4-1/4"	2-3/4"	57.80	55.29	52.77	50.26
56716	.3860	W	9.804	4-1/2"	2-7/8"	58.82	56.27	53.71	51.15
56721	.3906	25/64"	9.921	4-1/2"	2-7/8"	59.54	56.95	54.36	51.77
56726	.3937		10.000	114	73	61.33	58.66	56.00	53.33
56731	.3970	X	10.084	4-1/2"	2-7/8"	62.82	60.09	57.36	54.63
56736	.4040	Y	10.262	4-1/2"	2-7/8"	63.25	60.50	57.75	55.00
56741	.4062	13/32"	10.317	4-1/2"	2-7/8"	65.18	62.35	59.51	56.68
56746	.4130	Z	10.490	4-1/2"	2-7/8"	65.78	62.92	60.06	57.20
56751	.4134		10.500	114	73	65.78	62.92	60.06	57.20
56756	.4219	27/64"	10.716	4-1/2"	2-7/8"	66.39	63.50	60.62	57.73
56761	.4331		11.000	114	73	71.22	68.12	65.03	61.93
56766	.4375	7/16"	11.113	4-1/2"	2-7/8"	71.22	68.12	65.03	61.93
56771	.4528		11.500	120	76	76.42	73.10	69.77	66.45
56776	.4531	29/64"	11.509	4-3/4"	3"	76.42	73.10	69.77	66.45
56781	.4688	15/32"	11.908	4-3/4"	3"	80.25	76.76	73.27	69.78
56786	.4724		12.000	120	76	80.49	76.99	73.49	69.99
56791	.4844	31/64"	12.304	4-3/4"	3"	80.49	76.99	73.49	69.99
56796	.4921		12.500	120	76	82.36	78.78	75.20	71.62
56801	.5000	1/2"	12.700	4-3/4"	3"	82.36	78.78	75.20	71.62

**TOLERANCES**

<i>d</i>	+.0000" - .0005" (+.0000 - .0127mm)	
<i>l1</i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)
<i>l2</i>	≤ 1/8"	+.125" - .062" (+3.175 - 1.588mm)
	> 1/8"	+.125" - .125" (+3.175 - 3.175mm)

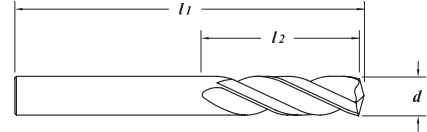


**Series 1100**

.1094" - .2040"  
(2.779mm - 5.182mm)

Recommended for cast iron, tungsten, and materials with high silicon content

- Solid submicron grain carbide drill
- Self-centering drill point
- Near reamer finishes
- Can be used as a core drill
- Tighter tolerance holes
- Improved roundness and straightness
- Live tooling recommended on lathe processes
- Hardlube Coating - page 88



DRILLS

EDP#	<i>d</i> †		<i>l1</i>	<i>l2</i>	1-11	12-24	25-49	50-100	
	Decimal	Diameter Metric							
90275	.1094	7/64"	2.779	2-1/4"	1-1/4"	12.64	12.09	11.54	10.99
90280	.1100	#35	2.794	2-1/4"	1-1/4"	12.77	12.21	11.66	11.10
90285	.1110	#34	2.819	2-1/4"	1-1/4"	12.94	12.38	11.81	11.25
90290	.1130	#33	2.870	2-1/4"	1-1/4"	13.14	12.57	12.00	11.43
90295	.1160	#32	2.946	2-1/4"	1-1/4"	13.32	12.74	12.16	11.58
90300	.1181		3.000	57	32	13.42	12.84	12.25	11.67
90305	.1200	#31	3.048	2-1/4"	1-1/4"	13.51	12.93	12.34	11.75
90310	.1250	1/8"	3.175	2-1/4"	1-1/4"	13.70	13.10	12.51	11.91
90315	.1285	#30	3.264	2-1/4"	1-1/4"	14.03	13.42	12.81	12.20
90320	.1360	#29	3.454	2-1/2"	1-3/8"	14.47	13.84	13.21	12.58
90325	.1378		3.500	63	35	14.93	14.28	13.63	12.98
90330	.1405	#28	3.569	2-1/2"	1-3/8"	15.10	14.44	13.79	13.13
90335	.1406	9/64"	3.571	2-1/2"	1-3/8"	15.27	14.61	13.94	13.28
90340	.1440	#27	3.658	2-1/2"	1-3/8"	15.88	15.19	14.50	13.81
90345	.1470	#26	3.734	2-1/2"	1-3/8"	16.10	15.40	14.70	14.00
90350	.1495	#25	3.797	2-1/2"	1-3/8"	16.24	15.53	14.83	14.12
90355	.1520	#24	3.861	2-1/2"	1-3/8"	16.27	15.57	14.86	14.15
90360	.1540	#23	3.912	2-1/2"	1-3/8"	16.42	15.71	14.99	14.28
90365	.1562	5/32"	3.967	2-1/2"	1-3/8"	16.49	15.77	15.06	14.34
90370	.1570	#22	3.988	2-1/2"	1-3/8"	17.54	16.78	16.01	15.25
90375	.1575		4.000	63	35	17.54	16.78	16.01	15.25
90380	.1590	#21	4.039	2-1/2"	1-3/8"	17.95	17.17	16.39	15.61
90385	.1610	#20	4.089	2-1/2"	1-3/8"	17.95	17.17	16.39	15.61
90390	.1660	#19	4.216	2-3/4"	1-5/8"	18.10	17.31	16.53	15.74
90395	.1695	#18	4.305	2-3/4"	1-5/8"	18.22	17.42	16.63	15.84
90400	.1719	11/64"	4.366	2-3/4"	1-5/8"	18.33	17.53	16.74	15.94
90405	.1730	#17	4.394	2-3/4"	1-5/8"	19.18	18.35	17.51	16.68
90410	.1770	#16	4.496	2-3/4"	1-5/8"	19.38	18.54	17.69	16.85
90415	.1772		4.500	70	41	19.48	18.63	17.79	16.94
90420	.1800	#15	4.572	2-3/4"	1-5/8"	19.57	18.72	17.87	17.02
90425	.1820	#14	4.623	2-3/4"	1-5/8"	20.01	19.14	18.27	17.40
90430	.1850	#13	4.700	2-3/4"	1-5/8"	20.13	19.25	18.38	17.50
90435	.1875	3/16"	4.763	2-3/4"	1-5/8"	20.13	19.25	18.38	17.50
90440	.1890	#12	4.801	2-3/4"	1-5/8"	20.27	19.39	18.51	17.63
90445	.1910	#11	4.851	2-3/4"	1-5/8"	20.50	19.61	18.72	17.83
90450	.1935	#10	4.915	2-3/4"	1-5/8"	21.46	20.53	19.59	18.66
90455	.1960	#9	4.978	3"	1-3/4"	21.99	21.03	20.08	19.12
90460	.1969		5.000	76	44	22.13	21.16	20.20	19.24
90465	.1990	#8	5.055	3"	1-3/4"	22.29	21.32	20.35	19.38
90470	.2010	#7	5.105	3"	1-3/4"	22.95	21.96	20.96	19.96
90475	.2031	13/64"	5.159	3"	1-3/4"	23.82	22.78	21.75	20.71
90480	.2040	#6	5.182	3"	1-3/4"	23.97	22.92	21.88	20.84

continued →

# Series 1100 (continued)

.2055" - .4134"  
(5.220mm - 10.500mm)

DRILLS

EDP#	$d^{\dagger}$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
90485	.2055	#5	5.220	3"	1-3/4"	24.07	23.02	21.98	20.93
90490	.2090	#4	5.309	3"	1-3/4"	24.48	23.42	22.35	21.29
90495	.2130	#3	5.410	3"	1-3/4"	24.90	23.82	22.73	21.65
90500	.2165		5.500	76	44	25.10	24.01	22.92	21.83
90505	.2188	7/32"	5.558	3"	1-3/4"	25.31	24.21	23.11	22.01
90510	.2210	#2	5.613	3"	1-3/4"	25.92	24.79	23.67	22.54
90515	.2280	#1	5.791	3"	1-3/4"	26.06	24.93	23.79	22.66
90520	.2340	A	5.944	3-1/4"	2"	26.35	25.20	24.06	22.91
90525	.2344	15/64"	5.954	3-1/4"	2"	26.45	25.30	24.15	23.00
90530	.2362		6.000	82	50	26.53	25.38	24.22	23.07
90535	.2380	B	6.045	3-1/4"	2"	26.63	25.48	24.32	23.16
90540	.2420	C	6.147	3-1/4"	2"	26.82	25.65	24.49	23.32
90545	.2460	D	6.248	3-1/4"	2"	27.01	25.84	24.66	23.49
90550	.2500	1/4" / E	6.350	3-1/4"	2"	27.21	26.03	24.84	23.66
90555	.2559		6.500	82	50	27.88	26.66	25.45	24.24
90560	.2570	F	6.528	3-1/4"	2"	28.46	27.23	25.99	24.75
90565	.2610	G	6.629	3-1/2"	2-1/8"	29.95	28.64	27.34	26.04
90570	.2656	17/64"	6.746	3-1/2"	2-1/8"	30.53	29.21	27.88	26.55
90575	.2660	H	6.756	3-1/2"	2-1/8"	31.41	30.04	28.68	27.31
90580	.2720	I	6.909	3-1/2"	2-1/8"	31.80	30.42	29.03	27.65
90585	.2756		7.000	88	54	32.03	30.64	29.24	27.85
90590	.2770	J	7.036	3-1/2"	2-1/8"	32.30	30.90	29.49	28.09
90595	.2810	K	7.137	3-1/2"	2-1/8"	32.60	31.19	29.77	28.35
90600	.2812	9/32"	7.142	3-1/2"	2-1/8"	33.76	32.30	30.83	29.36
90605	.2900	L	7.366	3-1/2"	2-1/8"	35.02	33.50	31.97	30.45
90610	.2950	M	7.493	3-3/4"	2-3/8"	37.18	35.56	33.95	32.33
90615	.2953		7.500	95	60	37.18	35.56	33.95	32.33
90620	.2969	19/64"	7.541	3-3/4"	2-3/8"	37.18	35.56	33.95	32.33
90625	.3020	N	7.671	3-3/4"	2-3/8"	37.46	35.83	34.20	32.57
90630	.3125	5/16"	7.938	3-3/4"	2-3/8"	37.50	35.87	34.24	32.61
90635	.3150		8.000	95	60	40.24	38.49	36.74	34.99
90640	.3160	O	8.026	3-3/4"	2-3/8"	40.24	38.49	36.74	34.99
90645	.3230	P	8.204	3-3/4"	2-3/8"	40.24	38.49	36.74	34.99
90650	.3281	21/64"	8.334	4"	2-1/2"	42.09	40.26	38.43	36.60
90655	.3320	Q	8.433	4"	2-1/2"	43.09	41.22	39.34	37.47
90660	.3346		8.500	101	63	43.47	41.58	39.69	37.80
90665	.3390	R	8.611	4"	2-1/2"	44.82	42.87	40.92	38.97
90670	.3438	11/32"	8.733	4"	2-1/2"	46.69	44.66	42.63	40.60
90675	.3480	S	8.839	4"	2-1/2"	48.24	46.15	44.05	41.95
90680	.3543		9.000	101	63	48.56	46.45	44.34	42.23
90685	.3580	T	9.093	4-1/4"	2-3/4"	48.96	46.83	44.70	42.57
90690	.3594	23/64"	9.129	4-1/4"	2-3/4"	49.36	47.21	45.07	42.92
90695	.3680	U	9.347	4-1/4"	2-3/4"	52.70	50.41	48.12	45.83
90700	.3740		9.500	107	70	53.60	51.27	48.94	46.61
90705	.3750	3/8"	9.525	4-1/4"	2-3/4"	53.60	51.27	48.94	46.61
90710	.3770	V	9.576	4-1/4"	2-3/4"	55.65	53.23	50.81	48.39
90715	.3860	W	9.804	4-1/2"	2-7/8"	59.25	56.67	54.10	51.52
90720	.3906	25/64"	9.921	4-1/2"	2-7/8"	60.12	57.51	54.89	52.28
90725	.3937		10.000	114	73	62.31	59.60	56.89	54.18
90730	.3970	X	10.084	4-1/2"	2-7/8"	64.16	61.37	58.58	55.79
90735	.4040	Y	10.262	4-1/2"	2-7/8"	64.64	61.83	59.02	56.21
90740	.4062	13/32"	10.317	4-1/2"	2-7/8"	67.00	64.09	61.17	58.26
90745	.4130	Z	10.490	4-1/2"	2-7/8"	67.69	64.75	61.80	58.86
90750	.4134		10.500	114	73	67.69	64.75	61.80	58.86

EDP#	$d^{\dagger}$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
90755	.4219	27/64"	10.716	4-1/2"	2-7/8"	68.45	65.47	62.50	59.52
90760	.4331		11.000	114	73	74.32	71.09	67.86	64.63
90765	.4375	7/16"	11.113	4-1/2"	2-7/8"	74.32	71.09	67.86	64.63
90770	.4528		11.500	120	76	80.65	77.14	73.64	70.13
90775	.4531	29/64"	11.509	4-3/4"	3"	80.65	77.14	73.64	70.13
90780	.4688	15/32"	11.908	4-3/4"	3"	85.32	81.61	77.90	74.19
90785	.4724		12.000	120	76	85.58	81.86	78.14	74.42
90790	.4844	31/64"	12.304	4-3/4"	3"	85.58	81.86	78.14	74.42
90795	.4921		12.500	120	76	87.84	84.02	80.20	76.38
90800	.5000	1/2"	12.700	4-3/4"	3"	87.84	84.02	80.20	76.38



# Series 1100H

.1094" - .2165"  
(2.779mm - 5.500mm)



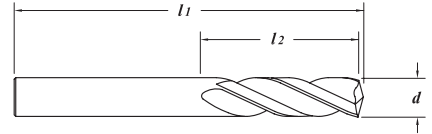
### TOLERANCES

$d$	+.0000" - .0005" (+.0000 - .0127mm)	
$l_1$	$\leq 1/8"$	+.125" - .062" (+3.175 - 1.588mm)
	$> 1/8"$	+.125" - .125" (+3.175 - 3.175mm)
$l_2$	$\leq 1/8"$	+.125" - .062" (+3.175 - 1.588mm)
	$> 1/8"$	+.125" - .125" (+3.175 - 3.175mm)

Recommended for cast iron, tungsten, and materials with high silicon content

## Hardlube Coating

- Solid submicron grain carbide drill
- Self-centering drill point
- Near reamer finishes
- Can be used as a core drill
- Excellent heat resistance and lubricity
- Tighter tolerance holes
- Improved roundness and straightness
- Live tooling recommended on lathe processes
- Uncoated - page 85

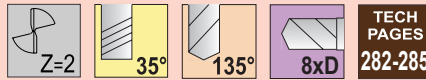


EDP#	$d$ †		$l_1$	$l_2$	1-11	12-24	25-49	50-100	
	Decimal	Diameter Metric							
90276	.1094	7/64"	2.779	2-1/4"	1-1/4"	14.55	13.92	13.28	12.65
90281	.1100	#35	2.794	2-1/4"	1-1/4"	14.70	14.06	13.42	12.78
90286	.1110	#34	2.819	2-1/4"	1-1/4"	14.85	14.20	13.56	12.91
90291	.1130	#33	2.870	2-1/4"	1-1/4"	15.08	14.42	13.77	13.11
90296	.1160	#32	2.946	2-1/4"	1-1/4"	15.23	14.56	13.90	13.24
90301	.1181		3.000	57	32	15.35	14.69	14.02	13.35
90306	.1200	#31	3.048	2-1/4"	1-1/4"	15.46	14.78	14.11	13.44
90311	.1250	1/8"	3.175	2-1/4"	1-1/4"	15.61	14.93	14.25	13.57
90316	.1285	#30	3.264	2-1/4"	1-1/4"	15.95	15.26	14.56	13.87
90321	.1360	#29	3.454	2-1/2"	1-3/8"	16.41	15.70	14.98	14.27
90326	.1378		3.500	63	35	16.86	16.13	15.39	14.66
90331	.1405	#28	3.569	2-1/2"	1-3/8"	17.04	16.30	15.56	14.82
90336	.1406	9/64"	3.571	2-1/2"	1-3/8"	17.19	16.45	15.70	14.95
90341	.1440	#27	3.658	2-1/2"	1-3/8"	17.81	17.04	16.26	15.49
90346	.1470	#26	3.734	2-1/2"	1-3/8"	18.01	17.23	16.44	15.66
90351	.1495	#25	3.797	2-1/2"	1-3/8"	18.17	17.38	16.59	15.80
90356	.1520	#24	3.861	2-1/2"	1-3/8"	18.19	17.40	16.61	15.82
90361	.1540	#23	3.912	2-1/2"	1-3/8"	18.34	17.55	16.75	15.95
90366	.1562	5/32"	3.967	2-1/2"	1-3/8"	18.42	17.62	16.82	16.02
90371	.1570	#22	3.988	2-1/2"	1-3/8"	19.47	18.62	17.78	16.93
90376	.1575		4.000	63	35	19.47	18.62	17.78	16.93
90381	.1590	#21	4.039	2-1/2"	1-3/8"	19.90	19.03	18.17	17.30
90386	.1610	#20	4.089	2-1/2"	1-3/8"	19.90	19.03	18.17	17.30
90391	.1660	#19	4.216	2-3/4"	1-5/8"	20.02	19.15	18.28	17.41
90396	.1695	#18	4.305	2-3/4"	1-5/8"	20.14	19.26	18.39	17.51
90401	.1719	11/64"	4.366	2-3/4"	1-5/8"	20.25	19.37	18.49	17.61
90406	.1730	#17	4.394	2-3/4"	1-5/8"	21.08	20.16	19.25	18.33
90411	.1770	#16	4.496	2-3/4"	1-5/8"	21.31	20.38	19.46	18.53
90416	.1772		4.500	70	41	21.40	20.47	19.54	18.61
90421	.1800	#15	4.572	2-3/4"	1-5/8"	21.51	20.57	19.64	18.70
90426	.1820	#14	4.623	2-3/4"	1-5/8"	21.94	20.99	20.03	19.08
90431	.1850	#13	4.700	2-3/4"	1-5/8"	22.03	21.08	20.12	19.16
90436	.1875	3/16"	4.763	2-3/4"	1-5/8"	22.03	21.08	20.12	19.16
90441	.1890	#12	4.801	2-3/4"	1-5/8"	23.58	22.55	21.53	20.50
90446	.1910	#11	4.851	2-3/4"	1-5/8"	23.79	22.76	21.72	20.69
90451	.1935	#10	4.915	2-3/4"	1-5/8"	24.77	23.69	22.62	21.54
90456	.1960	#9	4.978	3"	1-3/4"	25.30	24.20	23.10	22.00
90461	.1969		5.000	76	44	25.42	24.31	23.21	22.10
90466	.1990	#8	5.055	3"	1-3/4"	25.58	24.46	23.35	22.24
90471	.2010	#7	5.105	3"	1-3/4"	26.25	25.11	23.97	22.83
90476	.2031	13/64"	5.159	3"	1-3/4"	27.12	25.94	24.76	23.58
90481	.2040	#6	5.182	3"	1-3/4"	27.27	26.08	24.90	23.71
90486	.2055	#5	5.220	3"	1-3/4"	27.38	26.19	25.00	23.81
90491	.2090	#4	5.309	3"	1-3/4"	27.80	26.59	25.38	24.17
90496	.2130	#3	5.410	3"	1-3/4"	28.22	26.99	25.77	24.54
90501	.2165		5.500	76	44	28.41	27.17	25.94	24.70

EDP#	$d^{\dagger}$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
90506	.2188	7/32"	5.558	3"	1-3/4"	28.60	27.36	26.11	24.87
90511	.2210	#2	5.613	3"	1-3/4"	29.21	27.94	26.67	25.40
90516	.2280	#1	5.791	3"	1-3/4"	29.35	28.07	26.80	25.52
90521	.2340	A	5.944	3-1/4"	2"	29.76	28.47	27.17	25.88
90526	.2344	15/64"	5.954	3-1/4"	2"	29.85	28.56	27.26	25.96
90531	.2362		6.000	82	50	29.95	28.64	27.34	26.04
90536	.2380	B	6.045	3-1/4"	2"	30.05	28.74	27.44	26.13
90541	.2420	C	6.147	3-1/4"	2"	30.23	28.92	27.60	26.29
90546	.2460	D	6.248	3-1/4"	2"	30.44	29.12	27.79	26.47
90551	.2500	1/4" / E	6.350	3-1/4"	2"	30.61	29.28	27.95	26.62
90556	.2559		6.500	82	50	34.14	32.66	31.17	29.69
90561	.2570	F	6.528	3-1/4"	2"	34.71	33.20	31.69	30.18
90566	.2610	G	6.629	3-1/2"	2-1/8"	36.20	34.63	33.05	31.48
90571	.2656	17/64"	6.746	3-1/2"	2-1/8"	36.79	35.19	33.59	31.99
90576	.2660	H	6.756	3-1/2"	2-1/8"	37.66	36.03	34.39	32.75
90581	.2720	I	6.909	3-1/2"	2-1/8"	38.07	36.41	34.76	33.10
90586	.2756		7.000	88	54	38.28	36.62	34.95	33.29
90591	.2770	J	7.036	3-1/2"	2-1/8"	38.58	36.91	35.23	33.55
90596	.2810	K	7.137	3-1/2"	2-1/8"	38.87	37.18	35.49	33.80
90601	.2812	9/32"	7.142	3-1/2"	2-1/8"	40.03	38.29	36.55	34.81
90606	.2900	L	7.366	3-1/2"	2-1/8"	41.29	39.49	37.70	35.90
90611	.2950	M	7.493	3-3/4"	2-3/8"	43.44	41.55	39.66	37.77
90616	.2953		7.500	95	60	43.44	41.55	39.66	37.77
90621	.2969	19/64"	7.541	3-3/4"	2-3/8"	43.44	41.55	39.66	37.77
90626	.3020	N	7.671	3-3/4"	2-3/8"	43.72	41.82	39.92	38.02
90631	.3125	5/16"	7.938	3-3/4"	2-3/8"	43.76	41.86	39.95	38.05
90636	.3150		8.000	95	60	46.49	44.47	42.45	40.43
90641	.3160	O	8.026	3-3/4"	2-3/8"	46.49	44.47	42.45	40.43
90646	.3230	P	8.204	3-3/4"	2-3/8"	46.49	44.47	42.45	40.43
90651	.3281	21/64"	8.334	4"	2-1/2"	48.37	46.27	44.16	42.06
90656	.3320	Q	8.433	4"	2-1/2"	49.36	47.21	45.07	42.92
90661	.3346		8.500	101	63	49.74	47.58	45.41	43.25
90666	.3390	R	8.611	4"	2-1/2"	51.11	48.88	46.66	44.44
90671	.3438	11/32"	8.733	4"	2-1/2"	52.93	50.63	48.33	46.03
90676	.3480	S	8.839	4"	2-1/2"	56.19	53.75	51.30	48.86
90681	.3543		9.000	101	63	56.51	54.05	51.60	49.14
90686	.3580	T	9.093	4-1/4"	2-3/4"	58.48	55.94	53.39	50.85
90691	.3594	23/64"	9.129	4-1/4"	2-3/4"	58.86	56.30	53.74	51.18
90696	.3680	U	9.347	4-1/4"	2-3/4"	62.22	59.51	56.81	54.10
90701	.3740		9.500	107	70	63.12	60.38	57.63	54.89
90706	.3750	3/8"	9.525	4-1/4"	2-3/4"	63.12	60.38	57.63	54.89
90711	.3770	V	9.576	4-1/4"	2-3/4"	65.67	62.81	59.96	57.10
90716	.3860	W	9.804	4-1/2"	2-7/8"	69.26	66.25	63.24	60.23
90721	.3906	25/64"	9.921	4-1/2"	2-7/8"	70.13	67.08	64.03	60.98
90726	.3937		10.000	114	73	72.30	69.16	66.01	62.87
90731	.3970	X	10.084	4-1/2"	2-7/8"	74.16	70.94	67.71	64.49
90736	.4040	Y	10.262	4-1/2"	2-7/8"	74.66	71.41	68.17	64.92
90741	.4062	13/32"	10.317	4-1/2"	2-7/8"	77.00	73.66	70.31	66.96
90746	.4130	Z	10.490	4-1/2"	2-7/8"	77.68	74.31	70.93	67.55
90751	.4134		10.500	114	73	77.68	74.31	70.93	67.55
90756	.4219	27/64"	10.716	4-1/2"	2-7/8"	78.46	75.05	71.64	68.23
90761	.4331		11.000	114	73	84.32	80.65	76.99	73.32
90766	.4375	7/16"	11.113	4-1/2"	2-7/8"	84.32	80.65	76.99	73.32
90771	.4528		11.500	120	76	90.65	86.71	82.77	78.83
90776	.4531	29/64"	11.509	4-3/4"	3"	90.65	86.71	82.77	78.83
90781	.4688	15/32"	11.908	4-3/4"	3"	95.32	91.18	87.03	82.89
90786	.4724		12.000	120	76	95.58	91.42	87.27	83.11
90791	.4844	31/64"	12.304	4-3/4"	3"	95.58	91.42	87.27	83.11
90796	.4921		12.500	120	76	97.87	93.61	89.36	85.10
90801	.5000	1/2"	12.700	4-3/4"	3"	97.87	93.61	89.36	85.10

# Series 1800H

.1875" - .3125"  
(4.763mm - 7.938mm)



TOLERANCES	
<i>d</i>	+0.000" -0.005" (+0.000 -0.127mm)
<i>l1</i>	+0.125" -0.125" (+3.175 -3.175mm)
<i>l2</i>	+0.125" -0.125" (+3.175 -3.175mm)

Recommended for deep holes in soft, non-ferrous materials (aluminum, brass, bronze)

## Parabolic

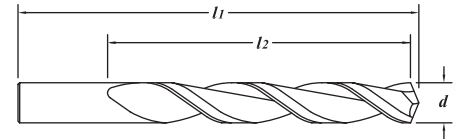
### Hardlube Coating

Solid submicron grain carbide drill

Wide open flutes and high helix remove chips quickly

4-facet point

Live tooling recommended on lathe processes



EDP#	<i>d</i> † Diameter		<i>l1</i> Overall Length	<i>l2</i> Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
22436	.1875	3/16"	4.763	3-13/16"	2-5/16"	23.69	22.66	21.63	20.60
22441	.1890	#12	4.801	3-13/16"	2-5/16"	24.23	23.18	22.12	21.07
22446	.1910	#11	4.851	3-13/16"	2-5/16"	24.78	23.71	22.63	21.55
22451	.1935	#10	4.915	3-15/16"	2-7/16"	25.33	24.23	23.13	22.03
22456	.1960	#9	4.978	3-15/16"	2-7/16"	25.90	24.77	23.65	22.52
22461	.1969		5.000	100	62	26.45	25.30	24.15	23.00
22466	.1990	#8	5.055	3-15/16"	2-7/16"	26.90	25.73	24.56	23.39
22471	.2010	#7	5.105	3-15/16"	2-7/16"	27.38	26.19	25.00	23.81
22476	.2031	13/64"	5.159	3-15/16"	2-7/16"	27.83	26.62	25.41	24.20
22486	.2055	#5	5.220	4"	2-1/2"	28.75	27.50	26.25	25.00
22496	.2130	#3	5.410	4"	2-1/2"	29.65	28.36	27.07	25.78
22501	.2165		5.499	102	64	30.13	28.82	27.51	26.20
22506	.2188	7/32"	5.558	4"	2-1/2"	30.58	29.25	27.92	26.59
22511	.2210	#2	5.613	4"	2-1/2"	31.03	29.68	28.33	26.98
22516	.2280	#1	5.791	4-1/8"	2-5/8"	31.50	30.13	28.76	27.39
22521	.2340	A	5.944	4-1/8"	2-5/8"	31.95	30.56	29.17	27.78
22526	.2344	15/64"	5.954	4-1/8"	2-5/8"	32.41	31.00	29.59	28.18
22531	.2362		6.000	105	67	32.94	31.50	30.07	28.64
22536	.2380	B	6.045	4-1/8"	2-5/8"	33.10	31.66	30.22	28.78
22541	.2420	C	6.147	4-1/4"	2-3/4"	33.29	31.85	30.40	28.95
22546	.2460	D	6.248	4-1/4"	2-3/4"	33.44	31.99	30.53	29.08
22551	.2500	1/4" / E	6.350	4-1/4"	2-3/4"	33.61	32.15	30.69	29.23
22556	.2559		6.500	108	70	34.73	33.22	31.71	30.20
22561	.2570	F	6.528	4-3/8"	2-7/8"	36.20	34.63	33.05	31.48
22566	.2610	G	6.629	4-3/8"	2-7/8"	37.18	35.56	33.95	32.33
22571	.2656	17/64"	6.746	4-3/8"	2-7/8"	38.26	36.60	34.93	33.27
22576	.2660	H	6.756	4-3/8"	2-7/8"	39.51	37.80	36.08	34.36
22581	.2720	I	6.909	4-3/8"	2-7/8"	40.70	38.93	37.16	35.39
22586	.2756		7.000	111	73	41.93	40.11	38.28	36.46
22591	.2770	J	7.036	4-3/8"	2-7/8"	42.85	40.99	39.12	37.26
22596	.2810	K	7.137	4-7/16"	2-15/16"	43.76	41.86	39.95	38.05
22601	.2812	9/32"	7.142	4-7/16"	2-15/16"	44.72	42.78	40.83	38.89
22606	.2900	L	7.366	4-7/16"	2-15/16"	45.69	43.70	41.72	39.73
22611	.2950	M	7.493	4-7/16"	2-15/16"	46.62	44.59	42.57	40.54
22616	.2953		7.500	116	78	47.53	45.46	43.40	41.33
22621	.2969	19/64"	7.541	4-9/16"	3-1/16"	47.63	45.56	43.49	41.42
22626	.3020	N	7.671	4-9/16"	3-1/16"	47.73	45.65	43.58	41.50
22631	.3125	5/16"	7.938	4-11/16"	3-3/16"	47.77	45.69	43.62	41.54

EDP#	$d^+$ Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
	Decimal	Metric							
22636	.3150		8.000	119	81	50.51	48.31	46.12	43.92
22641	.3160	O	8.026	4-11/16"	3-3/16"	51.66	49.41	47.17	44.92
22646	.3230	P	8.204	4-11/16"	3-3/16"	52.82	50.52	48.23	45.93
22656	.3320	Q	8.433	4-15/16"	3-7/16"	55.17	52.77	50.37	47.97
22661	.3346		8.500	125	87	56.32	53.87	51.42	48.97
22666	.3390	R	8.611	4-15/16"	3-7/16"	58.09	55.56	53.04	50.51
22671	.3438	11/32"	8.733	4-15/16"	3-7/16"	59.81	57.21	54.61	52.01
22676	.3480	S	8.839	5"	3-1/2"	61.62	58.94	56.26	53.58
22681	.3543		9.000	127	89	63.39	60.63	57.88	55.12
22686	.3580	T	9.093	5"	3-1/2"	63.65	60.89	58.12	55.35
22696	.3680	U	9.347	5"	3-1/2"	64.16	61.37	58.58	55.79
22701	.3740		9.500	130	92	64.41	61.61	58.81	56.01
22706	.3750	3/8"	9.525	5-1/8"	3-5/8"	64.70	61.89	59.07	56.26
22711	.3770	V	9.576	5-1/8"	3-5/8"	66.84	63.93	61.03	58.12
22716	.3860	W	9.804	5-1/8"	3-5/8"	68.97	65.97	62.97	59.97
22721	.3906	25/64"	9.921	5-1/4"	3-3/4"	71.15	68.06	64.96	61.87
22726	.3937		10.000	133	95	73.27	70.08	66.90	63.71
22731	.3970	X	10.084	5-1/4"	3-3/4"	76.03	72.72	69.42	66.11
22736	.4040	Y	10.262	5-3/8"	3-7/8"	78.76	75.34	71.91	68.49
22741	.4062	13/32"	10.317	5-3/8"	3-7/8"	81.57	78.02	74.48	70.93
22746	.4130	Z	10.490	5-3/8"	3-7/8"	85.95	82.21	78.48	74.74
22751	.4134		10.500	137	98	85.95	82.21	78.48	74.74
22756	.4219	27/64"	10.716	5-7/16"	3-15/16"	89.86	85.95	82.05	78.14
22761	.4331		11.000	138	100	92.64	88.62	84.59	80.56
22766	.4375	7/16"	11.113	5-7/16"	3-15/16"	92.64	88.62	84.59	80.56
22771	.4528		11.500	141	103	93.96	89.87	85.79	81.70
22776	.4531	29/64"	11.509	5-9/16"	4-5/16"	93.96	89.87	85.79	81.70
22781	.4688	15/32"	11.908	5-9/16"	4-5/16"	95.24	91.10	86.96	82.82
22786	.4724		12.000	141	110	96.57	92.37	88.17	83.97
22791	.4844	31/64"	12.304	5-9/16"	4-5/16"	96.57	92.37	88.17	83.97
22796	.4921		12.500	152	114	98.82	94.52	90.23	85.93
22801	.5000	1/2"	12.700	6"	4-1/2"	98.82	94.52	90.23	85.93
22806	.5118		13.000	152	114	117.71	112.60	107.48	102.36
22811	.5156	33/64"	13.096	6"	4-1/2"	124.91	119.48	114.05	108.62
22816	.5312	17/32"	13.492	6-1/8"	4-5/8"	132.10	126.36	120.61	114.87
22821	.5315		13.500	156	117	132.10	126.36	120.61	114.87
22826	.5469	35/64"	13.891	6-1/8"	4-5/8"	139.31	133.25	127.20	121.14
22831	.5512		14.000	156	117	146.45	140.09	133.72	127.35
22836	.5625	9/16"	14.287	6-1/4"	4-3/4"	156.92	150.10	143.27	136.45
22841	.5709		14.500	159	121	162.06	155.01	147.97	140.92
22846	.5781	37/64"	14.684	6-1/4"	4-3/4"	162.91	155.83	148.74	141.66
22851	.5906		15.000	162	124	167.13	159.86	152.60	145.33
22861	.6094	39/64"	15.478	6-7/16"	4-15/16"	169.02	161.67	154.32	146.97
22866	.6102		15.500	164	125	169.02	161.67	154.32	146.97
22871	.6250	5/8"	15.875	6-9/16"	5-1/16"	170.89	163.46	156.03	148.60