



## List 2000 - VP® GDR

### General Drilling Operations

Work Material		Low Carbon Steels 1010, 1018		Carbon Steels 1045, 1050		Alloy Steels 4140, 4330		Tool Steels D2, H13		Cast Iron	
Drilling Speed		125-160 SFM		80-120 SFM		80-100 SFM		30-50 SFM		130-200 SFM	
Drill Dia.		Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed
mm	Inch	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR
2	-	6,900	0.002-0.004	4,840	0.002-0.004	4,360	0.002-0.004	3300	0.003-0.004	8,000	0.003-0.004
3	-	4,600	0.004-0.005	3,230	0.004-0.005	2,900	0.004-0.005	2200	0.004-0.005	5,330	0.004-0.006
-	1/8	4,350	0.004-0.005	3,050	0.004-0.005	2,740	0.004-0.005	2080	0.004-0.005	5,030	0.004-0.006
4	-	3,450	0.004-0.006	2,420	0.004-0.006	2,180	0.004-0.006	1650	0.004-0.006	4,000	0.005-0.007
-	3/16	2,900	0.005-0.007	2,030	0.005-0.007	1,830	0.005-0.007	1390	0.005-0.007	3,360	0.006-0.008
6	-	2,300	0.005-0.007	1,610	0.005-0.007	1,450	0.005-0.007	1100	0.006-0.008	2,660	0.007-0.010
-	1/4	2,170	0.005-0.008	1,520	0.005-0.008	1,370	0.005-0.008	1040	0.006-0.008	2,520	0.007-0.010
8	-	1,700	0.006-0.009	1,210	0.006-0.009	1,090	0.006-0.009	820	0.007-0.010	2,000	0.008-0.012
-	3/8	1,450	0.007-0.011	1,010	0.007-0.011	910	0.007-0.011	690	0.008-0.011	1,680	0.009-0.013
10	-	1,380	0.008-0.011	960	0.008-0.011	870	0.008-0.011	660	0.008-0.011	1,600	0.010-0.014
-	7/16	1,240	0.009-0.012	870	0.009-0.012	780	0.009-0.012	590	0.009-0.012	1,440	0.011-0.015
12	-	1,150	0.009-0.013	800	0.009-0.013	720	0.009-0.013	550	0.009-0.013	1,330	0.012-0.017
-	1/2	1,080	0.010-0.014	760	0.010-0.014	680	0.010-0.014	520	0.010-0.014	1,260	0.012-0.017
14	-	980	0.011-0.015	690	0.011-0.015	620	0.011-0.015	470	0.010-0.015	1,140	0.013-0.017
-	5/8	870	0.012-0.016	610	0.012-0.016	550	0.012-0.016	420	0.011-0.017	1,010	0.013-0.018
16	-	860	0.012-0.017	600	0.012-0.017	540	0.012-0.017	410	0.011-0.017	1,000	0.013-0.018
18	-	760	0.013-0.019	540	0.013-0.019	480	0.013-0.019	370	0.013-0.018	890	0.014-0.020
-	3/4	720	0.013-0.020	510	0.013-0.020	450	0.013-0.020	350	0.013-0.019	840	0.015-0.021
20	-	690	0.014-0.020	480	0.014-0.020	430	0.014-0.020	330	0.014-0.020	800	0.016-0.022
22	-	620	0.016-0.022	440	0.016-0.022	400	0.016-0.022	300	0.015-0.022	730	0.017-0.023
24	-	570	0.016-0.024	400	0.016-0.024	370	0.016-0.024	270	0.016-0.024	660	0.018-0.026
26	-	530	0.017-0.026	370	0.017-0.026	340	0.017-0.026	250	0.017-0.026	610	0.019-0.027
28	-	490	0.018-0.028	340	0.018-0.028	320	0.018-0.028	240	0.019-0.027	570	0.020-0.029
30	-	460	0.019-0.030	320	0.019-0.030	300	0.019-0.030	220	0.020-0.029	530	0.021-0.031
32	-	430	0.020-0.031	300	0.020-0.031	280	0.020-0.031	210	0.021-0.031	500	0.023-0.033

1. The indicated speeds and feeds are when water soluble oil is used.
2. With the exception of using milling chucks, pay careful attention to ensure that drill is rigidly clamped and keep deflection at a minimum.
3. In case of drilling depth: >4D, reduce drilling speed as below.
4. When using non-water soluble oil or water-emulsifiable oil (over 10 times dilution), reduce drilling speed by 20%.
5. Step process should be used when drilling depth of the hole exceeds 4 times drill diameter for vertical machines or 3 times drill diameter for horizontal lathe machines.

#### D: Drill Diameter

Drilling Depth	≤5D	≤6D
Coefficient for reducing RPM	x0.9	x0.7

CONTINUED



Work Material	Cast Aluminum		Titanium Alloy		Hardened Steel		
			30-35 HRC		35-45 HRC		
Drilling Speed	230-400 SFM		60-80 SFM		30 - 50 SFM		
Drill Dia.	Speed	Feed	Speed	Feed	Speed	Feed	
	RPM	IPR	RPM	IPR	RPM	IPR	
mm	Inch						
2	-	15,270	0.005-0.007	3300	0.003-0.004	1,940	0.002-0.004
3	-	10,180	0.008-0.011	2200	0.004-0.005	1,290	0.004-0.005
-	1/8	9,620	0.008-0.012	2080	0.004-0.005	1,220	0.004-0.005
4	-	7,630	0.009-0.015	1650	0.004-0.006	970	0.004-0.006
-	3/16	6,410	0.011-0.016	1390	0.005-0.007	810	0.005-0.007
6	-	5,090	0.013-0.019	1100	0.006-0.008	640	0.005-0.007
-	1/4	4,810	0.013-0.019	1040	0.006-0.008	610	0.005-0.008
8	-	3,820	0.015-0.021	820	0.007-0.010	480	0.006-0.009
-	3/8	3,200	0.017-0.024	690	0.008-0.011	400	0.007-0.011
10	-	3,050	0.018-0.025	660	0.008-0.011	390	0.008-0.011
-	7/16	2,750	0.020-0.028	590	0.009-0.012	350	0.009-0.012
12	-	2,550	0.021-0.030	550	0.009-0.013	320	0.009-0.013
-	1/2	2,400	0.021-0.031	520	0.010-0.014	300	0.010-0.014
14	-	2,180	0.022-0.032	470	0.010-0.015	270	0.011-0.015
-	5/8	1,920	0.023-0.033	420	0.011-0.017	240	0.012-0.016
16	-	1,910	0.024-0.033	410	0.011-0.017	240	0.012-0.017
18	-	1,700	0.025-0.035	370	0.013-0.018	210	0.013-0.019
-	3/4	1,600	0.026-0.037	350	0.013-0.019	200	0.013-0.020
20	-	1,530	0.027-0.039	330	0.014-0.020	190	0.014-0.020
22	-	1,390	0.029-0.042	300	0.015-0.022	170	0.016-0.022
24	-	1,270	0.030-0.044	270	0.016-0.024	160	0.016-0.024
26	-	1,170	0.032-0.047	250	0.017-0.026	150	0.017-0.026
28	-	1,090	0.033-0.050	240	0.019-0.027	140	0.018-0.028
30	-	1,020	0.034-0.052	220	0.020-0.029	130	0.019-0.030
32	-	960	0.035-0.054	210	0.021-0.031	120	0.020-0.031