List 1000 - EX-GOLD®: Stub
List 1500 - EX-GOLD®: Jobbers

General Drilling Operations

Work Material			Low Carbon Steels 1010, 1018		Meduim Carbon Steels 1035, 1045		Alloy Steels 4140, 4340		Tool Steels D2, H13		Stainless Steels			
											300SUS, 400SUS		15-5PH ,17-4PH	
Drilling Speed			105-130 SFM		70-100 SFM		65-80 SFM		25-40 SFM		40 - 60 SFM		20 - 26 SFM	
Drill Dia. mm	Drill Dia. Inch	Decimal	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
-	5/64	0.0781	5,750	0.002 - 0.004	4,160	0.002 - 0.004	3,550	0.002 - 0.004	1,590	0.002 - 0.004	2,445	0.001-0.002	1,080	0.0006-0.001
2	-	–	5,710	0.002-0.004	4,120	0.002-0.004	3,520	0.002-0.004	1,570	0.002-0.004	2,430	0.001-0.002	970	0.0008-0.0012
-	3/32	0.0938	4,790	0.003-0.004	3,460	0.003-0.004	2,960	0.003-0.004	1,320	0.003-0.004	2,040	0.001-0.003	810	0.0010-0.0014
3	-	–	3,800	0.004-0.005	2,750	0.004-0.005	2,350	0.004-0.005	1,050	0.004-0.005	1,620	0.001-0.003	650	0.0012-0.0018
-	1/8	0.1250	3,590	0.004-0.005	2,600	0.004-0.005	2,220	0.004-0.005	990	0.004-0.005	1,530	0.001-0.003	610	0.0013-0.0019
4	-	–	2,850	0.004-0.006	2,060	0.004-0.006	1,760	0.004-0.006	790	0.004-0.006	1,210	0.002-0.004	490	0.0016-0.0024
-	3/16	0.1875	2,390	0.005-0.007	1,730	0.005-0.007	1,480	0.005-0.007	660	0.005-0.007	1,020	0.002-0.005	410	0.0019-0.0028
6	-	–	1,900	0.005-0.007	1,370	0.005-0.007	1,170	0.005-0.007	530	0.005-0.007	810	0.002-0.006	320	0.0024-0.0035
-	1/4	0.2500	1,800	0.005-0.007	1,300	0.005-0.007	1,110	0.005-0.007	500	0.005-0.007	760	0.002-0.006	310	0.0026-0.0037
8	-	–	1,430	0.007-0.009	1,030	0.007-0.009	880	0.007-0.009	390	0.007-0.009	610	0.003-0.008	240	0.0031-0.0047
-	3/8	0.3750	1,200	0.008-0.011	870	0.008-0.011	740	0.008-0.011	330	0.008-0.011	510	0.004-0.009	200	0.0037-0.0056
10	-	–	1,140	0.008-0.011	820	0.008-0.011	700	0.008-0.011	320	0.008-0.011	490	0.004-0.010	190	0.0039-0.0059
-	7/16	0.4375	1,030	0.009-0.012	740	0.009-0.012	630	0.009-0.012	280	0.009-0.012	440	0.004-0.011	170	0.0043-0.0066
12	-	–	950	0.009-0.012	680	0.009-0.012	580	0.009-0.012	260	0.009-0.012	400	0.005-0.012	160	0.0047-0.0071
-	1/2	0.5000	900	0.010-0.013	650	0.010-0.013	550	0.010-0.013	250	0.010-0.013	380	0.005-0.013	150	0.0050-0.0075
14	-	–	810	0.011-0.014	590	0.011-0.014	500	0.011-0.014	230	0.011-0.014	350	0.005-0.014	140	0.0055-0.0083
-	5/8	0.6250	720	0.012-0.015	520	0.012-0.015	440	0.012-0.015	200	0.011-0.014	310	0.006-0.016	120	0.0062-0.0093
18	-	–	630	0.013-0.016	450	0.013-0.016	390	0.013-0.016	180	0.012-0.015	270	0.007-0.018	110	0.0071-0.0106
-	3/4	0.7500	600	0.014-0.017	430	0.014-0.017	370	0.014-0.017	170	0.013-0.016	250	0.007-0.019	105	0.0075-0.0112

General Drilling Operations

Work Material			Cast Iron		Cast Aluminum		High Heat Material				Hardened Steel	
							Ti Alloy Ti-6Al-4V		Ni & Co Base Material Inconel718, Waspaloy		33-43 HRC	
Drilling Speed			105 - 130 SFM		205 - 330 SFM		20 - 26 SFM		20 - 26 SFM		40 - 60 SFM	
Drill Dia. mm	Drill Dia. Inch	Decimal	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
-	5/64	0.0781	5,750	0.003 - 0.004	13,090	0.006 - 0.008	1,080	0.0006-0.001	1,080	0.0006-0.001	2,445	0.001-0.002
2	-	–	5,700	0.003-0.004	13,000	0.006-0.008	1,120	0.0008-0.0012	970	0.0008-0.0012	2,430	0.001-0.002
-	3/32	0.0938	4,790	0.003-0.004	10,900	0.007-0.009	940	0.0010-0.0014	810	0.0010-0.0014	2,040	0.001-0.003
3	-	–	3,800	0.004-0.006	8,650	0.008-0.011	740	0.0012-0.0018	650	0.0012-0.0018	1,620	0.001-0.003
-	1/8	0.1250	3,590	0.004-0.006	8,180	0.008-0.011	700	0.0013-0.0019	610	0.0013-0.0019	1,530	0.001-0.003
4	-	–	2,850	0.006-0.008	6,480	0.010-0.013	560	0.0016-0.0024	490	0.0016-0.0024	1,210	0.002-0.004
-	3/16	0.1875	2,390	0.006-0.009	5,450	0.011-0.016	470	0.0019-0.0028	410	0.0019-0.0028	1,020	0.002-0.005
6	-	–	1,900	0.007-0.010	4,320	0.013-0.018	370	0.0024-0.0035	320	0.0024-0.0035	810	0.002-0.006
-	1/4	0.2500	1,800	0.008-0.010	4,090	0.013-0.019	350	0.0026-0.0037	310	0.0026-0.0037	760	0.002-0.006
8	-	–	1,430	0.008-0.012	3,240	0.015-0.021	280	0.0031-0.0047	240	0.0031-0.0047	610	0.003-0.008
-	3/8	0.3750	1,200	0.010-0.014	2,730	0.017-0.025	230	0.0037-0.0056	200	0.0037-0.0056	510	0.004-0.009
10	-	–	1,140	0.010-0.014	2,600	0.018-0.025	220	0.0039-0.0059	190	0.0039-0.0059	490	0.004-0.010
-	7/16	0.4375	1,030	0.011-0.015	2,340	0.019-0.027	200	0.0043-0.0066	170	0.0043-0.0066	440	0.004-0.011
12	-	–	950	0.011-0.016	2,160	0.020-0.028	190	0.0047-0.0071	160	0.0047-0.0071	400	0.005-0.012
-	1/2	0.5000	900	0.012-0.017	2,040	0.021-0.030	180	0.0050-0.0075	150	0.0050-0.0075	380	0.005-0.013
14	-	–	820	0.012-0.017	1,850	0.022-0.031	160	0.0055-0.0083	140	0.0055-0.0083	350	0.005-0.014
-	5/8	0.6250	720	0.013-0.018	1,640	0.023-0.032	140	0.0062-0.0093	120	0.0062-0.0093	310	0.006-0.016
18	-	–	630	0.013-0.018	1,440	0.024-0.033	120	0.0071-0.0106	110	0.0071-0.0106	270	0.007-0.018
-	3/4	0.7500	600	0.014-0.019	1,360	0.025-0.034	115	0.0075-0.0112	105	0.0075-0.0112	250	0.007-0.019

1. Speeds and feeds are based on using soluble oil where applicable 1:5 to 1:10 concentration.
2. When other than an end mill collet is used, make sure the drill shank is firmly attached.
3. For deep holes (4 times the drill diameter or deeper) use the lower recommended feed rate as a starting point and increase as needed for the best result.
4. Recommended feeds and speeds are starting points only. Actual performance will be determined by specific material, the condition of equipment being used, and coolant.