



List 1150 - NEXUS GDS: **Stub**

List 1650 - NEXUS GDR: **Jobbers**

General Drilling Operations

Work Material	Low Carbon Steels Mild Steels 1010, 1018		Medium Carbon Steels 1035, 1045		Alloy Steels 4140, 4130		Tool Steels D2, H13		Stainless Steels				
	Austenitic 304 (Sulfur < 0.02%)		Austenitic 304 (Sulfur > 0.02%) 303, 317						40-50 SFM		41-50 SFM		
Drilling Speed	130-195 SFM		80-150 SFM		60-125 SFM		40-80 SFM						
Drill Dia.	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	
mm	Inch												
1	-	15,750	0.001-0.002	11,160	0.001-0.002	8,970	0.001-0.002	5,820	0.001-0.002	4,360	0.0005-0.001	4,410	0.001-0.002
-	1/16	9,920	0.001-0.003	7,000	0.001-0.003	5,650	0.001-0.003	3,650	0.001-0.003	2,750	0.0005-0.001	2,780	0.001-0.002
2	-	7,880	0.002-0.004	5,580	0.002-0.004	4,480	0.002-0.004	2,910	0.002-0.004	2,180	0.001-0.002	2,200	0.002-0.003
-	3/32	6,620	0.003-0.004	4,680	0.003-0.004	3,760	0.003-0.004	2,440	0.003-0.004	1,830	0.001-0.002	1,850	0.002-0.003
3	-	5,250	0.004-0.005	3,720	0.004-0.005	2,990	0.004-0.005	1,940	0.004-0.005	1,450	0.001-0.003	1,470	0.003-0.004
-	1/8	4,960	0.004-0.005	3,500	0.004-0.005	2,820	0.004-0.005	1,830	0.004-0.005	1,370	0.001-0.003	1,390	0.003-0.004
4	-	3,940	0.004-0.006	2,790	0.004-0.006	2,240	0.004-0.006	1,455	0.004-0.006	1,090	0.002-0.003	1,100	0.003-0.005
-	3/16	3,310	0.005-0.007	2,340	0.005-0.007	1,880	0.005-0.007	1,220	0.005-0.007	915	0.002-0.004	925	0.004-0.006
6	-	2,630	0.005-0.008	1,860	0.005-0.008	1,490	0.005-0.008	970	0.005-0.008	725	0.003-0.005	735	0.005-0.007
-	1/4	2,480	0.005-0.008	1,750	0.005-0.008	1,410	0.005-0.008	910	0.005-0.008	685	0.003-0.005	695	0.005-0.007
8	-	1,970	0.007-0.009	1,395	0.007-0.009	1,120	0.007-0.009	725	0.007-0.009	545	0.003-0.006	550	0.006-0.009
-	3/8	1,650	0.008-0.011	1,170	0.008-0.011	940	0.008-0.011	610	0.008-0.011	460	0.004-0.007	460	0.007-0.011
10	-	1,575	0.008-0.011	1,115	0.008-0.011	900	0.008-0.011	580	0.008-0.011	435	0.004-0.008	440	0.008-0.011
-	7/16	1,420	0.009-0.012	1,000	0.009-0.012	810	0.009-0.012	520	0.009-0.012	390	0.005-0.009	400	0.009-0.012
12	-	1,310	0.009-0.013	930	0.009-0.013	750	0.009-0.013	485	0.009-0.013	365	0.005-0.009	370	0.009-0.013
-	1/2	1,240	0.010-0.014	870	0.010-0.014	705	0.010-0.014	450	0.010-0.014	345	0.005-0.010	350	0.010-0.014

1. The indicated speeds and feeds are for drilling with water soluble coolant.
2. The most suitable cutting fluid is water-emulsifiable high density oil (less than 10 times dilution)
3. When drilling cast surface (ie.not ground surface), reduce drilling speed by 20%.
4. For drilling depth>3D, reduce drilling speed (using the table below).
5. Step feeding is required for drilling depth>4D.
6. When using non-water soluble coolant or water-emulsifiable (over 10 times dilution), reduce the drilling speed by 20%.

D: Drill Diameter

Drilling Depth	≤4D	≤5D	≤6D
Coefficient for reducing RPM	x0.9	x0.8	x0.75

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Work Material	Stainless Steels						Cast Iron	Aluminum Alloy 5052, 7075	Cast Aluminum	Copper Copper Alloy					
	Martensitic 420, 440		Ferritic 430, 405		15-5PH 17-4PH										
Drilling Speed	42-50 SFM		43-50 SFM		44-50 SFM		110-195 SFM		105-205 SFM		205-325 SFM		130-195 SFM		
Drill Dia.	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	
mm	Inch														
1	-	4,460	0.0005-0.001	4,510	0.0005-0.001	4,550	0.0005-0.001	14,780	0.001-0.002	15,000	0.001-0.002	25,000	0.001-0.002	15,750	0.0005-0.001
-	1/16	2,810	0.0005-0.001	2,840	0.0005-0.001	2,870	0.0005-0.001	9,310	0.002-0.003	9,460	0.001-0.003	16,180	0.001-0.003	9,920	0.001-0.002
2	-	2,230	0.001-0.002	2,250	0.001-0.002	2,280	0.001-0.002	7,390	0.003-0.004	7,510	0.002-0.005	12,840	0.002-0.005	7,870	0.001-0.002
-	3/32	1,870	0.001-0.002	1,900	0.001-0.002	1,915	0.001-0.002	6,210	0.003-0.004	6,310	0.002-0.006	10,790	0.002-0.006	6,600	0.002-0.003
3	-	1,490	0.002-0.003	1,500	0.002-0.003	1,520	0.002-0.003	4,930	0.004-0.006	5,010	0.003-0.007	8,560	0.003-0.007	5,250	0.002-0.004
-	1/8	1,405	0.002-0.003	1,420	0.002-0.003	1,435	0.002-0.003	4,660	0.004-0.006	4,730	0.003-0.007	8,100	0.003-0.007	4,960	0.002-0.004
4	-	1,115	0.002-0.003	1,130	0.002-0.003	1,140	0.002-0.003	3,700	0.006-0.008	3,760	0.003-0.009	6,420	0.003-0.009	3,940	0.003-0.004
-	3/16	935	0.002-0.004	950	0.003-0.004	960	0.003-0.004	3,100	0.006-0.009	3,150	0.004-0.011	5,400	0.004-0.011	3,310	0.004-0.005
6	-	740	0.002-0.005	750	0.004-0.005	760	0.004-0.005	2,460	0.008-0.010	2,500	0.005-0.014	4,280	0.005-0.014	2,620	0.005-0.006
-	1/4	700	0.002-0.005	710	0.004-0.005	720	0.004-0.005	2,330	0.008-0.010	2,360	0.005-0.015	4,050	0.005-0.015	2,480	0.005-0.006
8	-	560	0.003-0.006	565	0.005-0.006	570	0.005-0.006	1,850	0.008-0.012	1,880	0.006-0.018	3,210	0.006-0.018	1,970	0.006-0.008
-	3/8	470	0.003-0.007	475	0.006-0.007	480	0.006-0.007	1,550	0.009-0.013	1,580	0.007-0.021	2,700	0.007-0.021	1,650	0.007-0.009
10	-	445	0.004-0.008	450	0.006-0.008	455	0.006-0.008	1,480	0.010-0.014	1,500	0.008-0.022	2,570	0.008-0.022	1,570	0.008-0.010
-	7/16	400	0.004-0.009	405	0.007-0.009	410	0.007-0.009	1,330	0.010-0.015	1,350	0.009-0.024	2,310	0.009-0.024	1,420	0.009-0.011
12	-	370	0.005-0.009	375	0.007-0.009	380	0.007-0.009	1,230	0.011-0.015	1,250	0.009-0.026	2,140	0.009-0.026	1,310	0.009-0.012
-	1/2	350	0.005-0.010	355	0.008-0.010	360	0.008-0.010	1,160	0.011-0.015	1,180	0.010-0.027	2,020	0.010-0.027	1,240	0.010-0.013

Work Material	High Heat Material				Hardened Steels		
	Ti-Alloy		Inconel		~35 HRC		
Drilling Speed	15 - 25 SFM		10 - 20 SFM		40 - 50 SFM		
Drill Dia.	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	
mm	Inch						
1	-	1,940	0.00025-0.0005	1,460	0.00025-0.0005	4,360	0.0005-0.001
-	1/16	1,220	0.0005-0.001	920	0.0005-0.001	2,750	0.0005-0.001
2	-	970	0.0005-0.001	730	0.0005-0.001	2,180	0.001-0.002
-	3/32	810	0.001-0.002	610	0.001-0.002	1,830	0.001-0.002
3	-	650	0.001-0.002	490	0.001-0.002	1,450	0.001-0.003
-	1/8	610	0.001-0.002	460	0.001-0.002	1,370	0.001-0.003
4	-	490	0.0015-0.003	360	0.0015-0.003	1,090	0.002-0.003
-	3/16	410	0.002-0.004	310	0.002-0.004	915	0.002-0.004
6	-	320	0.0025-0.005	240	0.0025-0.005	725	0.003-0.005
-	1/4	310	0.0025-0.005	230	0.0025-0.005	685	0.003-0.005
8	-	240	0.003-0.006	180	0.003-0.006	545	0.003-0.006
-	3/8	200	0.0035-0.007	150	0.0035-0.007	460	0.004-0.007
10	-	190	0.004-0.008	150	0.004-0.008	435	0.004-0.008
-	7/16	170	0.0045-0.009	130	0.0045-0.009	390	0.005-0.009
12	-	160	0.0045-0.009	120	0.0045-0.009	365	0.005-0.009
-	1/2	150	0.005-0.010	110	0.005-0.010	345	0.005-0.010

